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Form of Sound Waves.

In an article on page 302, this volume, SCIENTIFIC AMERICAN, on "the cause of sound and music," the opinion was expressed that the different qualities of sound (those of voices and various instruments) were caused by the *form* of the sound waves or vibrations. Experiments have recently been made to prove the correctness of this view; and an account of these has been published in the *Franklin Journal* (page 407) for this month. This is taken from the *Cosmos*—a European publication. The experiments were made by M. Leon Scott, whose apparatus consisted of a tube flaring out widely at one end, like a trumpet, and closed at the other end by a thin membrane, to the middle of which was attached a very light pencil. This tube concentrated the sounds which entered by its wide mouth, and the vibrations of the membrane thus produced were written with the pencil upon paper, which was carried with a uniform motion under the pencil by clockwork. The figures formed by the pencil on the paper were very different, both in *form* and dimensions, according as wind or stringed instruments, or the human voice were used. It was established by experiment that the series of vibrations formed by the sound of an instrument or voice was more regular in proportion as it was agreeable to the ear, or what is termed "pure." Shrill cries, harsh sounds, and disagreeable voices produced very irregular and unequal marks—ungraceful lines—upon the paper.

Large Ships.

The Liverpool *Albion* says that two vessels of greater length, and of a more remarkable character than the *Leviathan*, have been advancing to completion in Liverpool, without the general public being even cognizant of their existence. These vessels are each seven hundred feet long. They have been constructed by Messrs. Vernon & Son, for the Oriental Inland Steam Company, and are intended for the navigation of the Indian rivers. The purpose of their peculiar features of construction is to enable a large cargo to be carried at a good rate of speed upon a light draft of water. The great rivers of India, though penetrating far into the interior, and though containing large volumes of water, are, nevertheless, shallow during the dry season. The vessels navigating them must, therefore, float very light, and yet they must have displacement enough to carry a good cargo. They must have strength enough not to suffer injury if they should get aground, and they must present such little resistance to the water as to be able to achieve a satisfactory rate of progress against the stream. All these requirements are admirably fulfilled in these vessels.

SPRENKEL & BASFORD'S OSCILLATING ENGINE AND PUMP.

Fig. 1

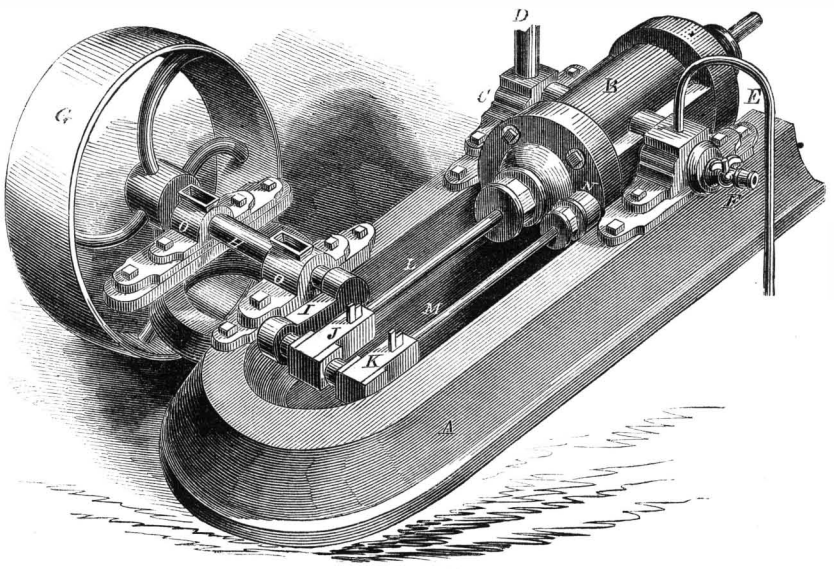


Fig. 2

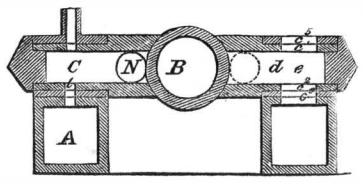
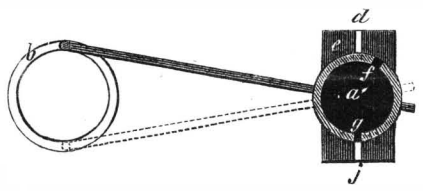


Fig. 3



The successful combination of a feed pump, with an oscillating cylinder, in a compact and cheap form, has long been desired as an important addition to the oscillating steam engine. This has been done by J. G. Sprenkel and T. W. Basford, of Harrisonburg, Va., whose invention forms the subject of the accompanying illustrations. Fig. 1 is a perspective view of their engine, Fig. 2 is a transverse section through the trunnions, and Fig. 3 is a diagram illustrating the action of the pump.

A is a hollow casting serving as a bed frame and condenser, the feed pipe from the pump to the boiler passing through it, so that it is surrounded on all sides by the escape steam from the exhaust port of the cylinder, which gives up its heat to the cold water. B is the cylinder mounted on hollow trunions that serve as valves and which rest in the boxes, C′. D is the steam pipe, and the steam passes from it into the trunnion, *d*, Fig. 2, through the ports, c^5 c^1, and exerts its force on the piston; then passing through the same side of the trunnion, which is divided into two parts by a vertical partition, *e*, it is exhausted through the lower ports, c^2 c^6, into the condenser, A.

The advantage of this partition is that while the steam is entering one half of the trunnion by the upper ports, the steam that gave the last stroke is being exhausted from its half of the trunnion by the lower ports, so that half of the trunnion will be ready to supply steam for the next stroke while the other is exhausting The fly wheel, G, seen in Fig. 1, with its axle, H, terminating in a crank, I, is supported in journal boxes, O, on a frame attached to A. This crank, I, is put in motion by the piston rod, L, which is connected with it by means of gib and keys, J, and to a prolongation of the crank is attached by the gib and keys, K, the pump rod, M, working in the pump, N. This pump may be cast in one piece with the cylinder, as represented, in our engravings, or it may be separated, as most convenient. E is the feed water pipe, and at every stroke of the pump piston water is drawn through it and through the pump trunnion into the pump chamber, and at the return stroke it is forced through the passage, *l*, Fig. 2, into the pipe communicating with the boiler. When it is unnecessary to pump water, the cock, F, Fig. 1 is opened, and the external air is pumped in and out, without in any way wearing out the pump or adding to the work of the engine.

The diagram, Fig. 3, illustrates the motions of the pumping parts; *b* represents the circle described by the crank and end of the pump rod, which is represented by *c*; *e* is the trunnion box, with ports, *d* and *j*; *a* is the trunnion, with ports, *f* and *g*. In the position which the rod, *c*, is, in the diagram, it is forcing water through the lower port, *g*, of the trunnion, *a*, and through the port, *j*, of the box into the boiler, and it will be seen that all connection with the feed water pipe port or end, *d*, and the entrance port, *f*, is closed, but when the rod assumes the position indicated by dotted lines, then the water is drawn through *d* and *f* into the trunnion and pump, and cannot pass into the boiler feed pipe until the rod has assumed the required position in its stroke.

It was patented Dec. 22, 1857, and further information can be obtained by addressing Messrs. Sprenkel & Rice, Harrisonburg, Va.

Photography on Ivory.

Some important inventions or improvements have just been brought into successful operation in the practice of photography by Messrs. Beard & Sharp, of Old Bond street, London. It is well known that ivory, notwithstanding its rare and valuable qualities for the purposes of the miniature-painter, has proved most intractable in the hands of the photographer, and until recently has baffled all attempts to bring it into successful use. Messrs. Beard & Sharp, however, have, to all appearance, succeeded in accomplishing this object. The process they adopt differs, we understand, very materially from any that has yet been made public, the ordinary chemicals being entirely disused in it; nor is any destructive agent used in "fixing," as in other processes. The metallic oxyd employed combines chemically with the substance of the ivory, and the consequence is a picture of great purity and brilliancy, which it is almost impossible to remove by time or any other agency. The importance of this discovery, when the value of ivory as a ground for miniature painting is considered, cannot be overrated; and some very beautiful colored specimens which we have inspected fully attest its practical availability, not for superseding, but for guiding and assisting, the labors of the miniature artist.—*Illustrated London News.*

Horse Flesh as Food.

Some tribes of Tartars have used horse flesh for food from time immemorial; and those who have partaken of it assert it is equal to beef for flavor and nutriment. It is now extensively used in most all the kingdoms and cities of continental Europe, especially in Austria and Prussia, where it is sold in the markets under the surveillence of the police. In Berlin alone, 350 horses are annually slaughtered for their flesh, and the Germans appear to be growing fast into genuine hippophagists. A strong prejudice was manifested against this flesh when its use was proposed, a few years since, in Germany, but this feeling seems to have vanished. In regard to this question, a writer in *Blackwood's Magazine* says:—

"Difficult as it may be to overcome a prejudice, no array of ignorance can prevent the establishment of a truth which is at once easily demonstrable and immediately beneficial. Prejudice may reject horse flesh, as it long rejected tea and potatoes. If horses are eaten, why not donkeys? The Greeks ate donkeys, and we must suppose they had their reasons for it. Has any modern stomach been courageous enough to try?"

Wine-growing.

At the recent wine-growers exhibition held at St. Louis, Mo., the first premium ($100) was awarded to T. S. Yeatman, of the Fairview Vineyard, Cincinnati, Ohio. Our Teutonic cousins, whose delicious still wines have so long been celebrated, will need to look well to their laurels, else our countrymen will bear away the palm. Yeatman's still wines will bear favorable comparison with the best of the Rhenish wines.

MACHINE FOR PEGGING BOOTS, &C.—Within the past three weeks we have had several inquiries in regard to machinery to be used in the making of boots and shoes. There is wanted a simple and efficient machine for pegging boots and shoes. Something has been done in this line already, but, we understand, without success.

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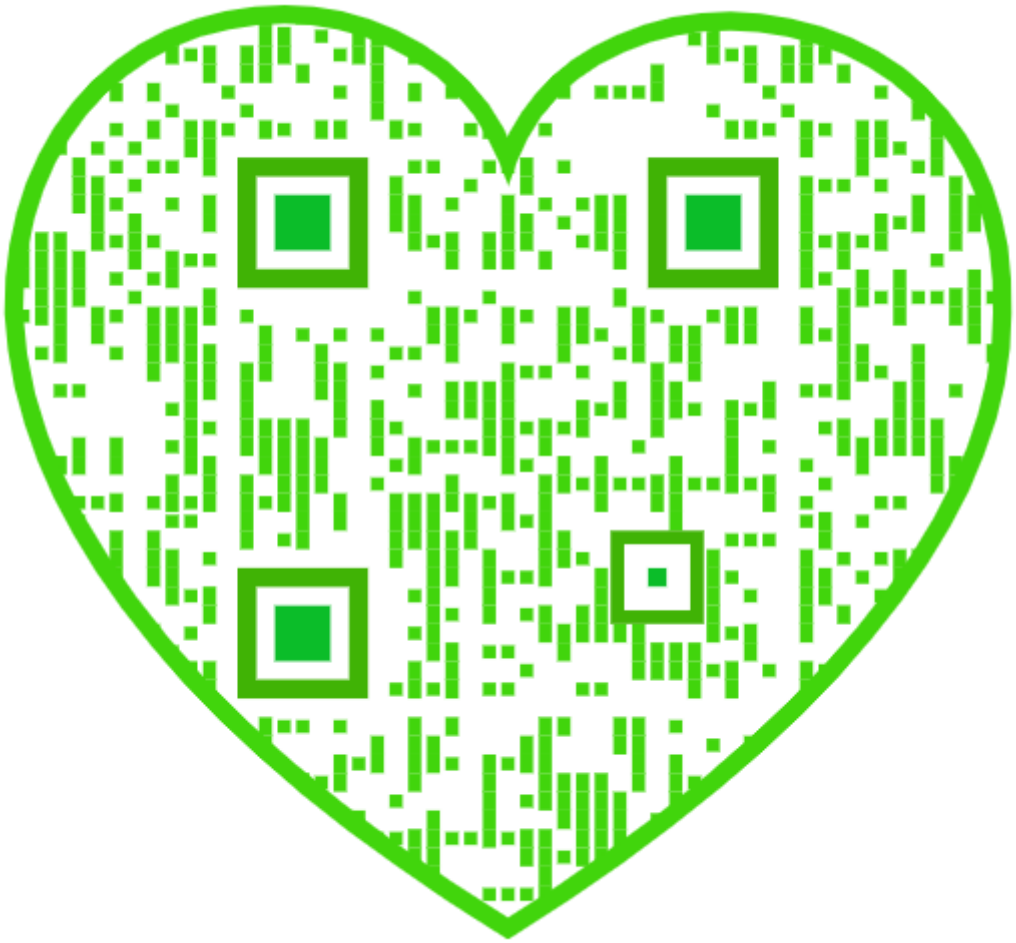

Issued from the United States Patent Office

FOR THE WEEK ENDING JUNE 29, 1858.

[*Reported officially for the Scientific American.*]

ARRANGEMENT OF STEAM COILS IN EVAPORATING VESSELS—H. O. Ames, of New Orleans, La. : I claim the arrangement of the convolute curved radiating pipes, E E, the pockets, F F, the straight water pipes, G G, and the steam and water chambers, B C, in the manner substantially as described.

[This is an improvement in the arrangement of the steam radiating pipes with pockets, to collect the water of condensation, and pipes to return the same to a waste chamber, whereby a uniform temperature is obtained over the whole horizontal area of the pan, and great facility is afforded for relieving the steam pipes of water.]

SEWING MACHINES—William F. Barnes, of Buffalo, N. Y. : I do not wish to be understood as claiming any particular mode of operating my improvements in sewing machines, or any precise shape of parts, as these may be varied without changing the principle of my invention.

I disclaim the patent of T. J. W. Robertson, dated May 22, 1855, and the patent of S. S. Turner, dated August 22, 1854.

But I claim the looper strip or point, T, when secured to the revolving rod or piston, V, and arranged and operating in combination with the step or looping aperture, G'', spring, N, and cylinder, P, in the manner and for the purpose specified.

Second, I claim the cloth-guiding apparatus, F F a a2, and t and t', as constructed, arranged and operating in combination with the feeding device, for the purpose specified.

DRAIN PLOW—Moses Barrowman, of Buffalo, N. Y. : I do not claim either of the bearing or adjustable wheels described, nor the arms, levers, or shafts by which they are supported, when separately considered.

Nor do I claim their combination or arrangement differently than as set forth.

Neither do I claim the combination of the cutter or cutters with the winding trough or circular conveyor, as that has been done before.

But I claim, first, the center piece, A, for the purpose of a main frame or support for the other parts of the plow, substantially as set forth.

Second, I claim the arrangement and combination of the adjustable wheels, G G, the arms, H H, shaft, K, lever, J, and segment, I, relatively to each other and the plow, as described.

MACHINERY FOR BRAIDING CORDAGE—James A. Brazin, of Canton, Mass. : I do not intend to restrict myself to the use of the particular number of spools mentioned in the description, it being obvious that by varying the size of the circular geared plate, g g, any number of spools which can be divided by three can be used.

I claim the combination of the gears, m m, geared circle, 9 9, and gears, o o, with their curved arms, whereby one spool and its strand is made to travel around two stationary ones, and thus form an interlocking twist, as described.

I also claim with the above combination of devices the use of a series of double gears, o o o o, whereby the spools can be revolved in either direction, according to the direction of the twist of the yarns.

MANUFACTURING BRAIDED CORDAGE, WEBBING, &c.—James A. Bazin, of Camden, Mass. : I claim my improvement in the manufacture of cordage webbing, or other similar fabrics, which consists in laying up or so combining the strands as to form an interlocking twist, in which each and every strand passes around and interlocks with two others, as set forth, and thereby brings the strain equally upon each strand.

GRINDING MILLS—Bachus A. Beardsley, of Waterville, N. Y. : I am aware that conical or semi-spherical shells, toothed both on their upper and lower surface, and encompassed by toothed cases, have been previously used.

And I am also aware that rotating toothed shells, perforated to allow the bark to pass through, have been used, for such device was previously patented by me, the Letters Patent bearing date February 4, 1843.

But I am not aware that conical or semi-spherical toothed shells have been used in connection with stationary arms and toothed cases and arranged as shown, so that any number of shells may be used, and the mill made of any desired grinding capacity, and at the same time rendered capable of being operated with a comparatively moderate expenditure of power, and also rendered capable of being graduated to grind fine or coarse, as desired.

I do not claim, therefore, any of the described parts, separately considered.

But I claim, first, The alternate combination of grinding shells, C G, with shells, F I, the shells, C G, having a smaller diameter or curve than the shells, F I, so that by merely duplicating the above parts, and employing them in connection with cases, D H, as shown and described, the capacity of the mill is correspondently increased.

Second, I claim providing the shell, G, with a guard, a, which fits into a rebate, b, in the upper part of case, D, so that shell G may be moved vertically at pleasure without the escape of the contents of the mill between the edges of said shell and case, substantially as described.

[A notice of this invention will be found on another page.]

SOCKET FOR TOOL HANDLES—William Bennett, of New York City : I do not claim, broadly, the socket having the form described, when used independently of the wedge.

Neither do I claim the wedge, when inserted into the end of a handle, and both handle and wedge driven into a socket or space having sides parallel with each other, whether such space or socket be closed or open at the bottom.

But I claim a tapering socket, made widest at the bottom or closed end, in combination with the wedge, B, constructed as described and for the purpose specified.

COTTON SEED PLANTERS—Edward F. Bostrom, of Newnan, Ga. : I do not claim separately any of the parts, irrespective of the arrangement shown.

But I claim the combination of the screw, F, and shaft, E, placed within the seed box, D, and provided with beaters, a, the whole being arranged to operate as and for the purpose set forth.

[This invention consists in a novel distributing device, whereby a proper and uniform discharge of seed from the hopper is insured, and also in a peculiar arrangement of furrow share, covering blades, clearers and gages. These are provided so that the furrows that receive the seed are made of a uniform depth, the seed properly covered, and all trash, such as weeds, sods, &c., prevented from entering the furrows while they are being formed, and the seed covered.]

MACHINES FOR TURNING SELVAGES IN CLOTH—John Y. Boyd, of Charlestown, Mass. : I claim a combination of the following devices, or their mechanical equivalents, viz., one or more guiding ledges, B C, a bending or creasing roller, C, a shoe or turning cam, b, and one or more flattening or pressing rollers, a, applied together and to a table or bed, A, and so as to operate substantially in manner and for the purpose as specified.

And in combination therewith I claim the press board, d, arranged with respect to the table, and the said devices for turning and pressing the selvage of the cloth, substantially in manner and so as to operate on the cloth as specified.

ROTARY SAWING MACHINES—Harvey Brown, of New York City : I do not claim this device for setting the block, as I have it already in a patent granted to me for a sawing machine, dated November 10, 1857. In arranging the carriage in reference to the saw it should be so placed that the plane of the saw shall be at the center of the block to be sawed.

What I claim is the arrangement of the hoop or band saw, operating vertically within a circular horizontal carriage with adjustable feed motion, by which there is a continuous motion of both saw and carriage, all operating in unison with reference to the desired end, when in motion, substantially in the manner and for the purpose set forth.

COATING METALLIC SURFACES—William Butcher and William A. Butcher, of Philadelphia, Pa. : We do not claim the coating described, nor the application of a coating or varnish, which is impervious to air, vapor, or water, to the surface of metals, to prevent the oxydation of said metals.

What we claim is the process of coating metallic surfaces described, consisting of heating the metal to be coated to about 350° of heat, containing the mixture prepared as described, and in placing the metal to be coated in a baking oven, heated to about 200° of heat, to harden the coating, all as set forth.

PANTOGRAPHIC TELEGRAPH—Giovanni Caselli, of Florence, Italy : I do not claim the general use of electricity for producing fac-similes upon chemically prepared paper, or other material.

But I claim the mode of rapidly transmitting the fac similes of writings, drawings, cyphers, and arbitrary signs in colored characters, upon ordinary white or chemically-prepared papers, substantially as described.

I also claim the mode of receiving and transmitting different dispatches at the same time, and with a single wire, as described.

I also claim the use of local piles, with circuit always closed, for the production of the characters in chemically-prepared paper, as described.

SEWING MACHINE—Samuel Comfort, of Morrisville, Pa. : I do not claim broadly the passing of the loop of the needle thread over a shuttle, by a lateral movement of the needle, or the imparting of a feed motion to a fabric by a similar motion of the needle, or the exclusive use of a discoidal shuttle, in which the spool is central with the case, as the devices for accomplishing these objects are set forth in patents already granted.

But I claim first, The rocking frame, G, as operated by the crank, F, and constructed substantially as described, with its concave shuttle race in combination with the stationary shuttle.

Second, Imparting to the needle an upward and downward, combined with a lateral vibrating movement, by means of the rocking frame, G, and levers, H and J, as operated by the crank, F, substantially in the manner set forth.

Third, The vibrating concave shuttle race, K, with its lips, r and r', in combination with the discoidal shuttle, L, and adjustable retaining plate, M.

Fourth, Sustaining the needle in the slot, v, of the shuttle race during the time that the said needle is, by its lateral motion, imparting the feed motion to the fabric.

UPSETTING TIRE—G. W. Cooper, of Morenci, Mich. : I claim the jaws, G, attached to rods, f, which are provided with springs, g, and have a vertical movement, as well as a rotating one, and the inclined planes, h, in the plate below the jaws, C, the above parts being used in connection with the stationary jaws, F, the jaws being applied to the ledges, b b, of the plates, B D, and arranged as and for the purpose set forth.

[A notice of this improvement will be found in another column.]

MODE OF OBTAINING MOTIVE POWER—Peter Daniel, of Franklin county, Ky. : I claim the arrangement of pulleys, 1 2 6 7, wheels, 3 4 5, lever, i, belt or cord, J, shafts, S and S', and pulleys, K K, with the cords F' F', weights, o o', car, E, railroad, e, and the levers, B B, pulleys, P' and f. cord, C, and wheel, M, when all are operated in the manner set forth and for the purpose described.

ROLLING RAILROAD BARS—Giles Edwards, of Johnstown, Pa. : I claim the manner shown and described of arranging or disposing old rails, in forming a "pile" for the purpose set forth.

[A full description of this invention is given in another column.]

APPARATUS FOR SKINNING EELS—Adam Emeigh, of Jerusalem, N. Y. : I claim the holder or clamp formed of the frame, C, connected with a spring treadle, E, and provided with spurs, d d, and the knife, G, and leger blade, F, arranged relatively with each other, as shown, the above parts being fitted in or attached to a frame, A, and used in connection with a griper, T, and ripping knife, K, or their equivalents, substantially as and for the purpose set forth.

[See description in another column.]

ROTARY SHINGLE MACHINE—R. Freeman, of Fond du Lac, Wis. : I claim the horizontal rotating plate or carriage, E, circular saw, C, stationary and setting beds, F G, and jaws, c d, in connection with the roller K, and arm, o, the whole being arranged to operate substantially as and for the purpose set forth.

[This invention consists in the employment of a horizontal rotating carriage, circular saw, setting plate or bed, and dogs, so that it will saw shingles with the proper taper from a series of bolts, very quickly.]

LATHE FOR TURNING OVAL FRAMES—John. William and George Gardener, of New York City : We neither claim the device for obtaining the eccentric motion of the frame, nor causing the cutters as well as the frame to revolve.

But we claim constructing oval picture frames by the application of the revolving cutters, N and P, to the frame, Q, when the latter is caused to revolve in an oval path, and when the cutters are so arranged as to act simultaneously, one cutter to form the inside, and the other cutter the outside molding of the frame, as set forth.

ELECTRIC SIGNAL LIGHTS—Samuel Gardiner Jr., and Levi Blossom, of New York City : We claim the combination of a platinum coil, C, or its effective equivalent, which is illuminated by electricity, with a transparent signal lantern, B, said combination being effected by arranging the coil, C, within the lantern, B, upon two conducting wires, D D, which are connected with an electro-galvanic battery.

BUTTON FASTENING—Lester Goodwin, of New York City : I do not claim the employment of two parallel stationary bars with arms forcibly bent at right angles in different directions to fasten, and which must be forcibly bent back again when removed, for that is recognized as a well-known idea.

But I claim making one right-angled piece, M D A E, movable on its perpendicular leg, in and embraced by a band, B, to another right-angular piece, M D C G, and depending upon it for support. And the controlling of the position of the movable right-angled piece by a spring, F E, and the confining the spring, F, obstructions, L, on the surface, H K, swept by it, substantially confined as represented.

PANTALOONS—Benjamin J. Greely, of Springfield, Mass. : I claim making up the back part of pants with a lapel and elastic straps, A, instead of seaming them, as they have invariably been made, also the cutting of the top part or waistbands of pants, so as to be perfectly and pleasantly suspended at only two points, as C.

SEED PLANTERS—Richard B. Ground, of Marine Town, Ill. : I claim the arrangement of the respective parts of the planting apparatus with the adjustable three-fold frame-work of my improved corn planter, substantially in the manner and for the purpose set forth.

INK ROLLERS—Alpheus A. Hanseom, of Saco, Me. : I claim First, The employment of the several parts specified for the purpose of adapting the carriage to different sized forms, as set forth.

Second, Suspending the ink roller, B, in the rolling carriage, C, constructed in the manner set forth, and regulating and stationing said roller, by means of screws, a a, and nuts, c c, for the purpose of making an adjustable hand roller for inking type, the peculiarities and advantages of which are fully described.

RING CLAMPS FOR ENGRAVERS, &c.—Thomas R. Hopkins, of Petersburgh, Va. : I claim the adjustable encircling spring, D, arranged in the end of the stock, A C, and attached to an adjustable rod E, substantially as and for the purpose set forth.

[This invention consists in an adjustable ring clamp or hand tool for jewelers' or engravers' use, its office being to hold and firmly clasp, rings of different diameters, during the operation of filing out and engraving names or devices on the inner side, or circumference of the same. It also answers for holding watch wheels while cutting out the open spaces between the rim and center, to form the arms; and, in fact, serves generally as a useful and simple hand tool for jewelers and engravers to use during the performance of a variety of operations similar to those above stated. We regard this as a most excellent little tool, and think the jeweler or engraver would be greatly benefited by possessing himself of it.]

CULTIVATORS—William A. Hopkins, of Vicksburg, Miss. : I claim the arrangement of the beam, A, transverse beam, B, handles, C, bolts, D, shares, E, standards, F, and stays, G, when the several parts are constructed and united as described, and not other wise.

HORSESHOES—William E. Hubbard, of Randolph, N. Y. : I claim the combination of the hooks, B, the screw nut, c, being condensed as a part thereof, with the stiff unyielding shoe, A, for the purposes as set forth.

TYPE CASE FOR PRINTERS—Wm. A. Hunter, of Bryan, Ohio : I claim making the bottom of a type case of a metallic screen or other perforated material substantially in the manner and for the purpose described.

I also claim the sliding shaft, C, in combination with the perforated bottom, B, of a type case, substantially in the manner and for the purpose described,

SCREW PICKET—Oliver Hyde, of Benicia, Cal. : I claim the application of a loose swivel to the top of a coarse threaded screw, in combination with a catch or lug under the head of the screw, so that in connection the swivel becomes the lever to turn the screw into the ground.

BANK AND OTHER LOCKS—Wm. Johnson, of Milwaukie, Wis. : I claim, first, Interposing between the keyhole of the lock, and the racking stump or thrust plate of the bolt, centrally pivoted horizontal tumblers, which by the act of the key alone are brought into proper position to allow the unlocking movement of the bolt, when the key is withdrawn, the whole being constructed and capable of being operated as set forth.

Second, So connecting the sliding bridge plate to the sliding guard plate that the latter shall move to bring its slot in line with the slot in the socket by the motions of the bridge plate, and allowing the bridge plate motion only when the key shall be withdrawn from the socket, as described.

Third, Interposing between the horizontal tumblers and the pin or stud of the bridge plate an angular lever constructed as and operated by the means described.

Fourth, The arrangement of the bolt plate with the bridge plate and the guard plate in their relation to each other and the moving parts of the lock, so that while being operated by the same means, they have different periods of motion, as set forth.

PIPE COUPLING—David Kahnweiler, of Wilmington, N. C. : What I claim as my improvement in swiveling elbow joints for pipes for conveying gas, steam, or water is, combining with the male section, a, of the joint, an axial stem or rod, b, which passes into and through the female section, e, said stem having upon its projection end a screw thread to receive a tightening nut, d, and the joints, w and x, being provided with suitable washers, all as set forth.

MACHINES FOR CLEANING DAGUERREOTYPE PLATES—Charles Ketcham, of Pen Yan, N. Y. : I claim cleaners made as specified with the projections, J, as set forth; also the means for holding them in position with respect to each other, and the means for giving motion to the cleaners, when arranged as specified,

HARVESTERS—Wm. F. Ketchum, of Buffalo, N. Y. : I claim, first, The plate, E E, as a substitute for the usual main frame placed mainly within the rim of a driving wheel whose hub and spokes or supporting plates are placed at the outside laterally of the rim, as described.

Second, The internal zigzag groove in combination with the rock shaft, with its arms for vibrating the cutters, the whole arranged and operating as described.

Third, Supporting the boxes for the main shaft and the rock shaft upon a plate or its equivalent placed mainly within the rim of the driving wheel, as set forth.

SKIRT HOOPS—Martin Landenberger, of Philadelphia, Pa. : I claim constructing hooped skirts of a knitted fabric with elastic hoops interlooped in the same, substantially in the manner and for the purpose set forth.

ILLUMINATING COVERS FOR VAULTS, &c.—Elijah P. Leonard and P. H. Jackson, of New York City : We do not claim the supporting the plate of glass at their edges or circumference, as that is old. Nor do we claim the use of glass generally for the within named purpose.

We claim, first, The use of a plate or plates of glass in vaults covers, platforms, pavements, sidewalks, decks or for similar purposes, which plate or plates are supported from below, substantially in the manner specified.

Second, We claim thimbles, pins, or their equivalents, passing through perforations in a plate of glass or plates of glass, and formed with, connected to or resting on a suitable support beneath the plates of glass, substantially in the manner and for the purposes specified.

Third, We claim grooving or notching the edges of the plate of glass for the purpose of receiving projections, occupying said grooves or notches, and thus protecting the edges of the plate of glass from injury, as specified.

Fourth, We claim the use of perforated plates of glass for pavements, sidewalks, decks, platforms, vault covers, &c., prepared substantially in the manner and for the purposes described.

CANS FOR PRESERVING FOOD, &c.—Azel Storrs Lyman, of New York City : I claim the employment of the float surrounded by the protecting liquid, in combination with a vessel having an arrangement for discharging its contents, substantially as described for the purposes specified.

BEDSTEAD—Norman Lanphear, of Monmouth, Ill. : I do not claim the invention of circular or elliptical springs.

But I claim the arrangement of those parts of bedstead with each other which serve for stretching and securing permanent elasticity in the bottoms thereof in the manner and by the means specifically set forth.

KNIFE AND SPOON CLEANER—James Macnish, of Berlin, Wis. : I claim an improved new article of manufacture, to wit, a machine combining three disks C D E, the faces of which are adapted for cleaning large and small knives and the periphery of one of the same for sharpening knives, and the peripheries, a f, of the other two for cleaning the front and back of spoons and forks, substantially as set forth.

CARTRIDGES—G. W. Morse, of Baton Rouge, La. : I claim the tige secured in the cartridge case in either of the modes described, and all equivalents thereto for the purpose mentioned.

I also claim the combination and arrangment of the percussion cap and perforated disk, as described and for the purpose mentioned and any and all equivalents thereto.

NET FOR CATCHING FISH AT SEA—Benj. Merritt, Jr., of Charlestown, Mass. : I claim combining a seine or net with the hull of a navigable vessel substantially in the manner, and so as to operate therewith as described.

I also claim the mode of spreading the ends and outer edge of the net, viz., by the booms, f f, the sprits, d d, and the hauling tackles, h h, arranged and applied together and to the vessel as specified.

I also claim the combination of the brailing line, l, and the lifting tackles, i i, and m, with the net, its booms and the masts.

GAGE COCK AND ALARM WHISTLE—Alexander Miller, of Cleveland, Ohio : I am aware that a steam whistle has been so combined with a valve, and with a float that when the water in the boiler becomes low, the descent of the float will operate the valve and allow steam to escape to the whistle and give alarm, and it is upon this combination that my improvement bears, but I do not claim to have invented the combination nor the means or devices irrespective of their arrangement by and under which such combination may be made useful, and therefore—

What I claim is, the described arrangement of the steam alarm whistle and gage cock, with the jointed lever, H, m n, when constructed and operating in the manner and for the purpose set forth.

HAND DRILL—H. H. Packer, of Boston, Mass. : I claim the combination of the cylindrical shells, A', and m, with the feed screw and screw handle, substantially as and for the purpose specified.

VAPOR LAMPS—Wm. H. Racy, of Saint Augustine, Fla. : I claim the employment or use of a tube, H, and burner, K, arranged with a lamp or fountain, as shown, or in any way, so that the flame which is fed direct from the burning material within the fountain may serve as gas-generator to supply the illuminating flame, M, that issues from burner, K, and this I claim irrespective of any particular means which may be employed for supplying the illuminating flame with oxygen.

[A description of this invention will be found on another page.]

CHURNS—Alfred Rose, of Pen Yan, N. Y. : I claim the cam wheels, E E, and F F, and the part, D, constructed and arranged in the manner represented and for the purpose set forth.

APPARATUS FOR MANUFACTURING WHITE LEAD—R. Rowland, of New York City : I claim the combined manufacture of vinegar and white lead, and for the purpose of carrying on both simultaneously and without injury to the one or the other, namely, fitting the tops of vinegar vats, D (when said vats are placed in a room below the corroding room) to the floor, C, of the corroding room, substantially as above described in combination with covers, E, provided with openings, a, and valves, d, or any equivalent means for regulating the supply of acid or altogether closing up the communication between the interior of the vats and the corroding room whenever necessary, all substantially as described and represented in the drawings.

WASHING MACHINE—Perry C. Rude, of Morgantown, Va. : I claim, in combination with the plunger, G, the concave rack formed of stationary ribs, f, and hinged ones, g, so that the water behind the rack shall be jeted through the openings, i, in the stationary ribs into the clothes, substantially in the manner set forth.

COOKING STOVES—Silas T. Savage, of Albany, N. Y. : I do not claim the employment of hot air to heat an oven.

But I claim the arrangement of air tubes across the main flue of a cooking stove, for the purpose of receiving and transmitting the caloric of the fuel to the walls of an oven by a current of heated air, substantially as set forth in the specification.

GRINDING MILLS—William Scarlett, of Kenosha, Wis. : I do not claim broadly the screw rod with nut at the top for adjusting the grinding surfaces. Nor do I claim broadly the employment of crushing knives or blades above the grinding surfaces.

But I claim, first, The combination of the screw rod, B f J, thimble, c g, and separated hubs, E K e m n o, in the particular manner shown, and for the purposes described.

Second, The arrangement of the conical feed plate in the bottom of the hopper, loosely over the central box of the central screw, and so as to be adjusted vertically by means of set screws, independently of the crushing and grinding devices, in the manner and for the purposes set forth.

Third, The arrangement of the cutters, g, so that their vertical edge shall only nearly touch the horizontal edge of the cutter, S, and thus ensure the crushing of the corn, &c., between the same, at a point near the center of the mill, substantially as and for the purposes set forth.

[This invention relates to an improvement in that class of grinding mills which are constructed of cast iron, generally termed portable, and operated usually by animal power, for the purpose of grinding corn and cob and other substances used as food for stock. The invention consists, first, in a novel arrangement of certain parts, whereby these parts are connected in the simplest possible way, and the construction of the mill rendered very simple, and the principle bearing of its working parts kept continually in a perfectly lubricated state. Secondly, There is a peculiar device with which ears of corn may be crushed with a moderate expenditure of power. Thirdly, An adjustable feed plate is used, placed within the hopper, so as to regulate the supply of small grain to the mill, and prevent the choking and clogging of the same.]

GRAIN SEPARATORS—H. H. Seeley and Philander Griswold, of Hudson, Mich. : We do not claim operating the shoe, B, by means of the eccentric, F'', for this is a well known mechanical device, used for analgous purposes.

But we claim forming the fan box, C, of two parts, c d, and the fan, D, made also in two parts, so as to have one portion of the fan for each compartment of the box, and having the slides, F F, attached to the box, C, to regulate the admission of air into the opening, f, between the parts, c d, of the fan box, the whole being arranged as and for the purpose specified.

FIRE AND BURGLAR PROOF SAFES—Theodore Sharts, of Albany, N. Y. : I claim an improved new article of manufacture, to wit : A fire and burglar proof sectional cast iron safe, which has the junction between its sections accomplished by means of tongues and grooves, g h i j f e, and maintained by means of screw rods, E E, which have their ends entirely hid from sight and inaccessible to burglars, when the safe is finished, by flowing melted metal, p p', over and around the same, as set forth.

[A notice of this improvement will be found on another page.]

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STAVE MACHINE—William M. Sloane, of Buffalo, N. Y. : I claim operating the two rotary cutters, R R, in a vertically moving frame, F, substantially as set forth.

Second, I claim the arrangement of the cutters, R R and P, relatively to the revolving bed, A, former, L, and feed rollers, for the purposes and substantially as set forth.

Third, I claim the cam, K, when constructed according to the formula and used for the purpose as set forth.

SEED PLANTERS—George Smith and A. G. Perry, of Clyde, Ohio : We claim the shaft, O, and spring, P, adjustable spring box, Y, pulley, H, lever, L, seeding cylinder, R, hopper, S, and the cultivator, as described when the whole are constructed and arranged for operation conjointly, in the manner and for the purposes set forth.

SEWING MACHINES—E. Harry Smith, of New York, N. Y. : I claim revolving the shuttle by means of a series of drivers, 6, on the surface of a disk that is arranged to rotate at an angle to the plane of the shuttle's rotation, by which a continuous motion is given to the shuttle, while the drivers operate in such a manner that the needle and its thread are unobstructed in their action, substantially as specified.

CHURN—William H. Tambling, of Berlin, Wis. : I claim arranging a skeleton semi-sphere, H, on the upper side of the upper dasher, G', of reverse acting or forward and back acting churns, substantially as and for the purposes set forth.

FOUNTAIN PENS—Susan E. Taylor, of East Cambridge, Mass. : I do not claim a pen combined or provided with a fountain or reservoir stationary within the handle or penholder, and having a conduit leading from it in a manner so as to conduct ink from the fountain to the pen. Nor do I claim providing such fountain or reservoir, conduit and pen, with a piston to move in the reservoir. Nor do I claim furnishing the fountain with a stop cock arranged in the conduit and to regulate the supply of fluid to the pen. Nor do I claim providing the upper end of the reservoir or fountain with a screw cap, one or more air holes so arranged as to be covered by the screw cap.

But I claim an improved fountain pen, made with a penholder and a separate adjustable fountain, applied so as to be movable with the holder, substantially as and for the purpose as described.

I also claim when the tubular reservoir is provided with a piston as described, arranging a small air hole, g, through the side of the reservoir, so that the piston, besides being able to perform the office of elevating the ink into the fountain, may be made to cover the air hole more or less, and to operate as a valve to it, substantially in the manner and for the purpose as described.

SEWING MACHINES—John Thomson, of Worcester, Mass. : I do not claim broadly the use of a device separate from the looper for the purpose of spreading the second thread, as such a device has before been proposed. Neither do I claim a double looper to open the loop of needle thread and form a single chain stitch, as such a device has heretofore been used, and may be seen in the patents of Wm. Sage, June 30, 1851, and Rixford & Dimock, Jan. 19, 1858; but neither of these devices are used with or applicable to spreading the second thread to form a loop for the needle, because the device that spreads the said second thread must move between the looper having the eye for the second thread and the under side of the bed of the machine, for if said device moved at the side of the looper the said second thread would draw from its eye down between the two parts, and the spreader become useless. Therefore

I claim the spreading finger, 8, acting between the bed of the machine and the looper, i, that carries the second thread in such a manner that both enter the loop of needle thread, and then the spreader, 8, extends the loop of second thread as it draws from the eye of the looper to the cloth, substantially as and for the purposes specified.

BRAD PUNCH—John Thorndike, of North Weare, N. H. : I claim the cylinder, A C, provided with the rod, B, punch, A, and rod, F, the rod, B, having a spiral spring, D, placed around it, the above parts being used in connection with the reserve box, E, placed relatively with the cylinder, C, and the whole arranged to operate as and for the purpose set forth.

[A notice of this improvement will be found in another page.]

PROPELLER—William Thurber, of Olean, N. Y. : I claim the falling face of the blade in combination with the rear inclined surface, P, and the filling, Q, on the back of the blade, the construction and operation being substantially as set forth.

MACHINE FOR RESAWING LUMBER—E. H. Titus, of Wilkesbarre, Pa., and John Sharp, of Phillipsburgh, Pa. : We are aware that boards or "stuff" have been presented and fed obliquely to saws for the purpose of sawing in taper form, and we, therefore, do not claim broadly such operation.

But we claim the tilting frame, D, provided with feed and pressure rollers, f n, and also with the planer, j, and jointing cutters, t t, if desired, the frame being applied to the machine and arranged to operate substantially as and for the purpose set forth.

[This invention consists in having the feed rollers, pressure rollers, rotary planers and jointing cutters fitted within an adjustable frame, in such a manner that the rollers are rendered susceptible of an independent adjustment to conform to the varying thickness of boards or other "stuff" to be resawed, and the frame, at the same time, allowed to be tilted or inclined so that the "stuff" may be presented obliquely to the saw when required—the whole being so arranged that the stuff may be resawed into strips or pieces with parallel or taper sides as occasion may require, and in either case planed and jointed at the same time.]

BURNING FLUID LAMPS—Hiram Todd, of Columbus, Ohio : I do not claim the application of a water chamber around the wick tubes of lamps, to apply water to the wick to extinguish the light or any such device.

But I claim the arrangement of the water chamber, D, with the tubes, B C, and wick tube, I, constructed and operating as and for the purposes set forth.

I also claim the arrangement of the safety valve, F, and tube, E, with the wick tube, I, in the manner and for the purposes specified.

COTTON GINS—J. Alexander Ventress, of Woodville, Miss. : I claim in combination with the ribs set close up to the saws, forming of a clear space between the ribs at that point where the teeth of the saw carries the cotton through them, to prevent said cotton from being brought in contact with said ribs, substantially as and for the purpose set forth.

METHOD OF FASTENING THE WICK TUBE OF LAMP CAPS—William W. Wade, of Longmeadow, Mass. : I claim the method of fastening the wick tube and spindle for raising and depressing the wick in lamp attachments, without the use of solder, in the manner described.

I claim no other part of the attachment.

SEED PLANTERS—Augustus Wales, of Pontiac, Ill. : I claim the arrangement of the two cranks, g, to the wheel, f, the pitmans, h h, the levers, i i, i' i', and rollers, D D, with gates, E E, provided with slides, c c c, all being constructed and operated in the manner set forth and for the purpose described.

BEDSTEAD—C. A. Warner, of Bristol, Conn. : I do not claim either of the parts separately considered, as I know they have been in use.

But I claim the arrangement of the staples and pins, C D, pulleys, B, spindle, F, ratchet, G, pawl, H, in the manner and for the purpose as described.

ATTACHING AND HOUSEING PROPELLERS—William Webster, of Jefferson county, Washington Territory : I claim, first, The sliding ports, G H I, (of any shape required by the form of hull and propellers,) and connected apparatus by which they are operated for covering and uncovering the propellers, substantially as specified, in combination with the trunk, J, and trap hatch, P.

Second, The pipe, F, leading from the propeller chamber to the pump well, as and for the purpose described.

Third, The mode of attaching and detaching the after propeller blades as and for the purpose specified in combination with the slide ports and propeller chambers.

Fourth, The air chambers in the bow and stern as arranged relatively to the propeller recesses or chambers, substantially as and for the purpose described.

FIRE LADDERS—Joseph Welte, of Buffalo, N. Y. : I do not claim the ladders described, nor their combination, nor the extension thereof, by any means. Neither do I claim hinging the ladders to the carriage.

I claim the combination of the right angled levers, B and B', (hinged to the carriage) with the frame, B, and windlass, E, for the purpose of elevating the ladders and lowering the foot thereby easily to the ground, and for detaching the same from the carriage, substantially as set forth.

I also claim the combination of the right angled frame, h h, including the wheels, i i, with the top most ladder, for the purposes as set forth.

SEWING MACHINES—H. B. West and H. F. Willson, o Elyria, Ohio : We claim the spring looper bar in combination with the eccentric, I, and the oscillating fork, J, and stationary projection, N, against which the outer end of the looper bar strikes, for the purpose of carrying the looper bar back and forth as required and giving it two intermittents or stop motions, carrying the looper into a position where the needle will pass through it, and allowing the spring again to recoil immediately after the needle has passed through said loop—the whole being constructed in the manner and for the purposes described.

USE OF DENTISTS' PATTERN PLATES—William M. Wright, of Pittsburg, Pa. : I make no claim to the casting of such work, the process being described in the Dental Journal of 1852.

But I claim the use of metallic pattern plates or their equivalents, made as described for the purpose set forth and specified.

OBTAINING PURE SULPHUROUS ACID.—Joseph Albrecht, (assignor to Charles E. Rulh,) of New Orleans, La. : I do not claim to have made any new discovery in chemical science, but I have applied known principles of science in such new and useful manner as to greatly improve the act of making pure sulphurous acid on a large scale.

I claim the described process for the purification of sulphurous acid gas by absorbing the acid into water or an alkaline solution, and the subsequent expulsion therefrom by the use of heat or steam, substantially as set forth for the purposes described.

ORE SEPARATOR—Hezekiah Bradford, (assignor to Horatio Bogert,) of New York, N. Y. : Having thus pointed out what distinguishes my invention from the old and well known hand jig, the mode of construction which I have tried with success, and the modifications which I have contemplated the better to distinguish the character of my invention from merely formal changes.

What I claim, is making the sieve box, which has an up and down motion, with apertures above the sieve or the equivalent thereof, when acting in and in combination with water or a surrounding tank or trough, substantially as and for the purpose specified.

And I also claim in combination therewith, the partition, or its equivalent, in the water tank, substantially as specified, to keep the matter which is washed over separate from the substances which pass through the meshes of the sieve, as set forth.

I also claim covering the surface of the sieve with particles of matter of larger size than the meshes of the sieve, that they may lay on and not enter or pass through such meshes, but act as valves to such meshes as described when such mode of operation is to be employed for separating substances of different specific gravity, which have been prepared and assorted so as to be of less size than the meshes of the sieve that they may pass through such meshes freely, substantially and for the purpose specified.

DOUBLE ACTING GUN LOCK—Eliash Brey, (assignor to himself and J. S. Swartley,) of Pennsburg, Pa. : I claim the swivel hammer, H, in combination with the center swell pin, C, or its equivalent, constructed, arranged and operating substantially as and for the purpose set forth.

CONVERTING PEAT INTO CHARCOAL—J. Burrows Hyde, (assignor to Anna M. Hyde,) of New York, N. Y. : I claim the process described of converting peaty matters, into charcoal by previously submitting them to heat in a drying chamber, described and heated as set forth, and by carbonizing the material and subsequently cooling the same in the manner set forth.

SASH FASTENER—Solomon Carhart and Wm. Moore of Brooklyn, N. Y., (assignors to James H. McWilliams, of New York, N. Y.): We claim the hinged drop, e, and plate, d, attached to the lower sash in combination with the plate, f, attached to the upper sash when the said drop, e, is kept beneath the edge of the plate, f, by means of the bolt, Q, or its equivalent, substantially as and for the purposes specified.

APPARATUS FOR RECTIFYING—Ethan Campbell, (assignor to Henry Thayer,) of Cambridgeport, Mass. ; I do not claim that the pan, condenser, column or receivers are of my invention.

But I claim the general combination of the different parts, with the attachment of the air pump so as to produce the effect desired.

I claim combining with the rectifying column, B, the vertical discharge pipe, j, and the series of horizontal pipes which connect it with the column, B, as set forth.

SEWING MACHINES—Thomas A. Dugdale, (assignor to himself and John A. Burbank,) of Richmond, Ind. : I do not claim giving motion to the shuttle and feeding device by means of the vibrating motion of the needle arm. I do not claim the spiral groove, cam, eccentric or inclined plane, neither separately nor combined, as they have before been used.

But I claim the construction of lever, I, with its circle at the end, through which upright, F, works in combination with stud, i, and slot, f, and eccentric. M, and feed hand, m, the whole being constructed, arranged and operated substantially as described and for the purposes set forth.

DEVICE FOR SECURING CUTTERS IN ROTARY PLANING MACHINES—Sands F. Forman, (assignor to Henry Z. Drew,) of New York, N. Y. : I do not claim a beading or rebating cutter attached to the cylinder of a planing machine in itself.

But I claim securing a beading or rebating cutter into a slot in the stock of a planing machine cylinder by pressure from the straight cutter or knife, and from a screw running nearly parallel with the axis of the rotary cutter, substantially as and for the purposes specified.

SEWING MACHINES—Westley Miller, of Cambridge, N. Y., assignor to himself and Wm. P. Prescott, of New York, N. Y. : I do not claim a looper moving in the arc of a circle, as that has before been used. Neither do I claim moving such looper by a disconnected lever.

But I claim the hooked heel piece, 12, and straight side, 13, on the looper stock, g, in combination with the finger, h, having a reciprocating motion on the slide, f, whereby the necessary motions for taking a loop pausing during the ascent and commencement of the descent of the needle thread are given from the continuously reciprocating finger, h, without the use of springs, as described and shown.

QUILTING FRAME—John King (assignor to himself, Wm Hegbie, Henry Link, and G. R. Comstock, of Little Falls, N. Y. : I claim the arrangement of the shafts, C G and H, and connecting bar, R, operating substantially as and for the purpose described,

DRAWING ROLLERS—S. P. Spencer (assignor to himself, S. S. Spencer and H. Boardman), of Lancaster Pa. : I claim providing the lower roller with grooves d, and the upper roll erwith leather collars, c, the said collar, c, bein garranged to run into the grooves, d, substantially as and for the purposes described.

[This invention consists in a certain construction of drawing rollers, which not only insures a much more perfect drawing, but reduces the first cost of the rollers. and also the cost of keeping them in repair.]

REVOLVING FIREARMS—F. D. Newbury, (assignor to R. V. De Witt, Jr.,) of Albany, N. Y. : I claim, first, The trigger, T, formed, fitted and operating as described, for the purpose of cocking the hammer, revolving the cylinder, holding the cylinder in the act of firing, and firing the piece.

Second, The combination of hammer, its pin, b, the trigger, and the ratchet wheel, formed and arranged substantially and for the purposes set forth in this specification.

APPARATUS FOR HEATING TIRES—J. J. White (assignor to himself and Francis Fox), of Philadelphia, Pa. : I claim the casting, B, with its revolving grate and lid, in combination with the fire chamber S, and fan, R, or other equivalent blowing apparatus, when the whole are arranged for joint operation, substantially as and for the purpose set forth,

VALVE GEARING FOR STEAM ENGINES—J. F. Allen, of New York City : I do not claim the use of a sliding toe, like g, applied to the arm of the valve rock shaft.

But I claim the arrangement of the swinging plate or open arm, F, with its two pointed swinging piece, H, or equivalent, substantially as described in combination with the single rock shaft, B, its arm, L, and movable toe, g, to operate the two induction valves as described.

[A notice of this improvement will be found in another column.]

RAILROAD CAR BRAKES—H. M. Collier, of Binghampton, N. Y. : I claim the arrangement and combination of the rock shaft, R, with the spring, H, and the axle boxes, I I, substantially as shown and described.

DESIGNS.

STOVES—James Horton (assignor to David Stuart and Richard Peterson), of Philadelphia, Pa.

STOVES—Joseph A. Reed (assignor to David Stuart and Richard Peterson), of Philadelphia, Pa.

COOKING STOVES—G. Smith and H. Brown (assignors to Leibrandt, McDowell & Co.), of Philadelphia. Pa.

COOKING STOVES—G. Smith and H. Brown (assignors to Leibrandt, McDowell & Co.), of Philadelphia, Pa.

Recent Patented Improvements.

The following inventions have been patented this week, as will be found by referring to our List of Claims :—

VALVE GEAR FOR STEAM ENGINES.—John F. Allen, of New York, has invented an improved valve gear, which consists in a certain arrangement of parts for operating the valve rock shaft of a steam engine in such a manner as to effect the induction of the steam at the proper time, and cut it off, at various points in the stroke. The invention can be used with both slide and poppet valves.

GRINDING MILL.—An improved mill for grinding bark for tanning purposes, has been invented by B. A. Beardsley, of Waterville, N. Y. It consists in the employment of a series of conical toothed grinding shells, stationary toothed arms, and toothed cases, arranged relatively with each other, so that the grinding capacity of the mill is greatly augmented.

DEVICE FOR UPSETTING TIRES.—G. W. Cooper, of Morenci, Mich., is the inventor of this device, which consists in a novel arrangement of the jaws or clamps which grasp the tire or bar to be upset, and which, owing to their peculiar arrangement, will allow the bar, while being compressed or upset, to be firmly pressed down upon its bed. This renders the device much more efficient than those now in use.

PORTABLE SAFE.—The object of this invention is to obtain a safe for domestic or family use, and one that may be constructed at a comparatively small cost, be perfectly fire-proof, and though small, be sufficiently large to contain jewelry, and small valuables. Theodore Sharts, of Albany, N. Y., is the inventor.

BRAD PUNCH.—John Thorndike, of North Weare, N. H., has invented an implement, the object of which is to facilitate the driving of brads, and consequently expediting the labor of "sticking" or attaching molding or beading to various articles of joinery, cabinet and similar work.

DEVICE FOR SKINNING EELS.—This invention, which is certainly novel, and to the use of which we hope the eels will soon become accustomed, consists in the employment of a clamp or holder and decapitating knife, used in connection with a griper and ripping knife, or their equivalents, whereby the desired work, viz., the skinning of eels, may be performed very expeditiously, and in a manner far preferable—*i. e.*, to the operator, not the eels—to that done by hand. The inventor is Adam Emeigh, of Jerusalem, N. Y.

IMPROVED PROCESS OF MAKING OLD RAILS INTO NEW ONES.—Old railroad rails are taken, and with them the "pile" is formed, so that the labor and expense of the preparatory rolling of each old rail into flat bars, as at present practiced, is avoided, and new rails are rolled direct from the old ones, equally as good, in every respect, as the ones rolled or constructed by the old process. Giles Edwards, of Johnstown, Pa., is the inventor.

LAMP.—W. H. Racey, of Saint Augustine, Fla., has invented an improved lamp, the object of which is to supply the flame with a large or requisite amount of oxygen, without the employment of the glass chimney, that is generally used at present. This lamp is more especially adapted to burn coal oil, and other substances rich in carbon, although it is applicable to any light-producing material. The illuminating fluid known as coal oil, gives, when properly consumed, a beautiful light, but on account of a chimney having to be added to the lamp, it could not be moved from place to place; with this lamp it can, and therefore this invention will do much to encourage the use of this cheap source of illumination.

Dudley Observatory.—A Row.

This institution, not yet fairly under weigh, has got into trouble, and the trustees have summarily removed Mr. B. A. Gould from the post of Superintendent Astronomer, for alleged impertinence and incivility, and also for his want of attention to what they conceived to be the business of the Observatory. The Albany *Argus* contains a full and spicy account of the whole proceedings, to which we would refer such of our readers as may be further interested.

This matter is akin to the troubles which for some years past have disturbed and nearly destroyed the usefulness of the American Association—a small clique who have their headquarters at Cambridge, Mass., and whom the Albany trustees designate as the "wise men of the east," assume to dictate and rule in all matters of science, and attempt to ostracise all who do not in some way bow before the great New England university. These men have studiously resisted all attempts to introduce practical topics for discussion in the Association, and do not consider the thoughts and suggestions of any enterprising mechanic as at all worthy of their attention. They would much rather discuss the question "Why roosters crow at night," or the "mathematics of phylotaxis," or still better, spend their time in self-adulation.

Since the above was written, Mrs. Dudley has requested a majority of the trustees to resign, and the Scientific Council has also reprimanded them. Altogether it seems as if our quiet gubernatorial city was going to be the scene of a great disturbance, and, until the difficulty is settled, we hope that the stars will not miss their accustomed watching. Really these quarrels in an institution designed for the world's benefit make the combatants look very small, and cause the world to lose its appreciation of men of science.

Facts about Gunpowder.

The heat given out by the combustion of gunpowder is 1,145° Fah. The temperature of the flame must be 5,390°. The tension of the gases at the moment of explosion does not exceed 4,373 atmospheres, in place of 50,000 or 100,000, at which it has been estimated. The amount of force exerted by one pound of gunpowder is 221,240 pounds raised one foot high.—*Cosmos.*

Explanation.

Owing to the publication in this number of our paper of the report of the decision in Goodyear's case, we are compelled to postpone the continuation of the articles on boilers and furnaces until next week, when we will give the third of the series.

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New Inventions.

Composition for Printer's Rollers.

R. & H. Harrild have obtained an English patent for a method of reducing the glue to a proper state for combining with molasses and the other ingredients usually employed in the manufacture of the printers' rollers composition, without soaking it in water, in order that the glue may be obtained as free from water as possible. Instead of soaking the glue in water previous to melting it, it is subjected to a high degree of steam pressure in an enclosed vessel, so as to convert it into a jelly-like mass, above which the condensed steam will float, unmixed with the glue. The water is drawn off by any suitable means, and the composition is finished in the ordinary manner.

Purifying Gutta Percha.

H. H. Day, of New York, has obtained a patent in England for extracting from gutta percha a peculiar etheric oil which it contains preparatory to its being subjected to the process of vulcanization, by submitting it to the action of a liquor which dissolves out the etheric oil, and also, at the same time, by acting upon the woody matter, disengages the sand or other foreign substances held therewith. This liquor is composed of caustic potash (hydrate of potassa) dissolved in water, with an ether formed from a solution of chloride of lime and alcohol added, and after the crude gutta percha is placed therein the whole mass is heated to a boiling point, and so kept for about nine hours, and then treated between rollers under water, in the ordinary manner. When taken out, the gum will consist of a pure and solid mass, resembling india rubber, and fully equal to it in fineness, and in the readiness with which it may be worked to prepare it for the additional process of vulcanization.

Improved Ore Washer.

Our engravings illustrate the invention of H. Barnard, of this city, which is designed to insure the more perfect separation of gold from auriferous quartz, when crushed, or from any other ore, by mechanical means alone, or combined with amalgamation, and also a washer for any kind of ore.

Fig. 1 represents a general gold washer and separator, and Fig. 2 is an amalgamator and separator combined, intended more especially to break up and disintegrate auriferous substances which require severe agitation, such as those combined with clay, manganese, &c., and also to extract the most minute quantities of gold from iron, sand, or crushed quartz, by means of quicksilver.

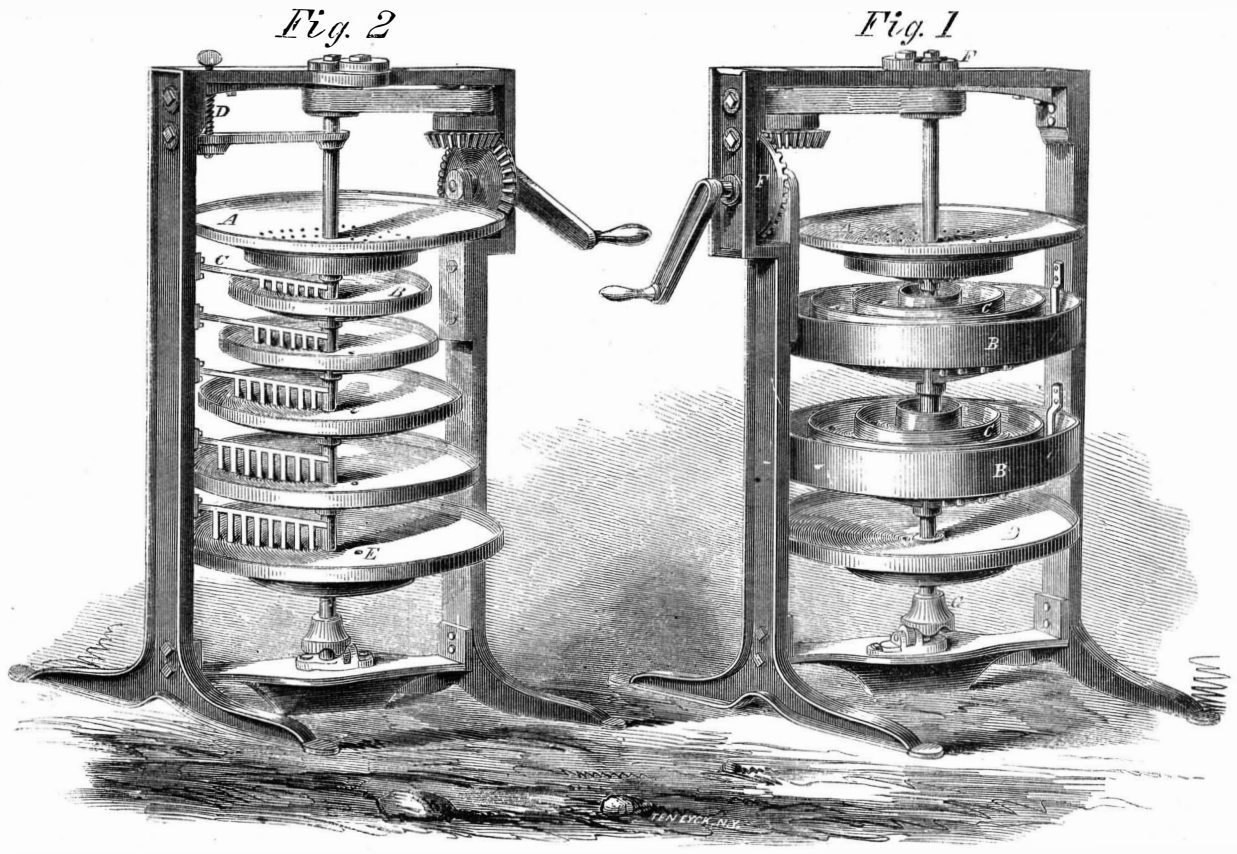
The inventor has experienced all the changing scenes of a miner's life on both sides of our continent, and he has endeavored to produce a machine which shall fulfil the want which he himself has felt, namely, one which is simple, durable, portable, and not liable to get out of order; and of his success any miner or mechanic will at once be able to judge. These machines are made of different sizes, to suit the amount of work to be done, the smaller size being about four feet high, and weighing about 250 lbs.

In Fig. 1, A is a sieve pan, that separates pebbles, &c., from the finer auriferous substances, which then pass on to a small convex retention rim pan, C, and from that to a large concave retention rim pan, B, being carried through the center of the pan, B, on to another small convex, C, and over its edge to a large concave, B, and through its center to the general receiving pan, D, the gold being retained behind the rims. Close at the back of each retention rim is a small hole, which, during the process of washing, is cosed with a stopper. In order to collect the gold or ores retained behind the rims, the stoppers are withdrawn, and a stream of clear water introduced at the top, which washes all the ores through the holes into the general receiving pan, D, from which it can be collected into any suitable vessel.

By means of an eccentric, F, the vertical shaft which holds the pans is given five vibratory motions to each revolution of the pans by the gearing, E, and by means of the cam, G, it also receives the same number of vertical motions in the same time.

Fig. 2 is composed of a series of pans, increasing in diameter, and attached to the shaft by set screws. The substances to be separated are introduced with water by a sluice or race, discharging on to the sieve pan, A, thence passing through holes into the small concave pan, B. C represents a series of agitators, one in each pan, so arranged as to be moved up and down with the pans, always in the same line, by the screw, D. This

BARNARD'S GOLD WASHER AND ORE SEPARATOR.

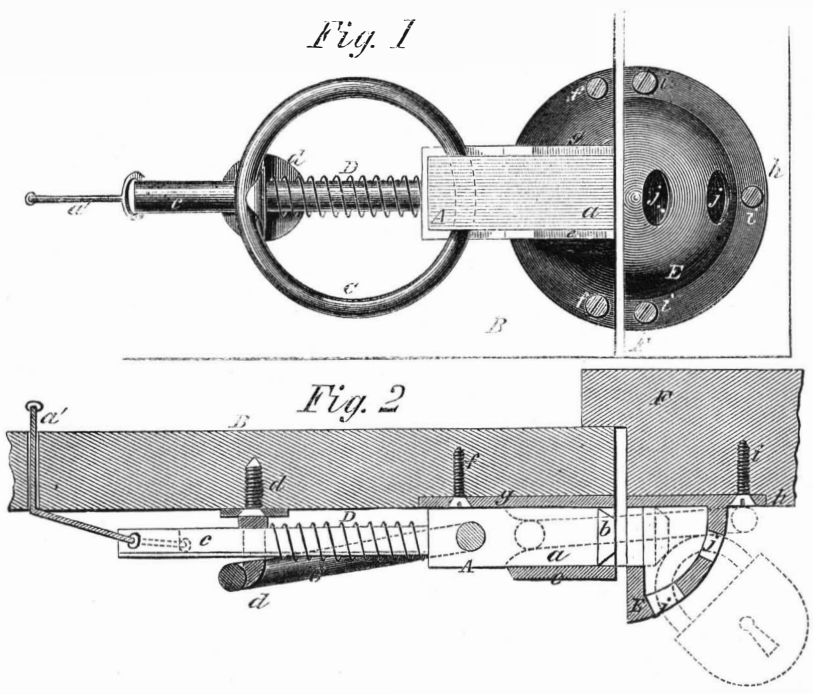


agitator throws the light waste over the edge of the pan to the one below, which is made broader, to receive it, and so on to the next in order, till it passes to the bottom pan, E, the gold being retained in the upper ones. In each of these pans is a hole closed with stoppers, which can be removed to allow the gold to be washed through when desired. In amalgamating, a similar process is carried on, quicksilver being added to the sand and water, and the amalgam is retained or finally caught in the lower pan.

All that is necessary for the perfect operation of the machine is to properly regulate the motion and quantity of water necessary to throw off the waste matter.

These machines were patented February 16, 1858, and they may be seen at No. 206 William street, New York, where all communications can be addressed to Barnard's Gold Separator, for further information.

DEVIN'S RING BOLT.



This invention consists in the use of a slide bolt, with a ring attached, employed in connection with a spring, socket or nosing and guide, so that a most simple and economical ring bolt is obtained, which is suitable for the ordinary hinged doors or sliding ones, such as railroad freight cars, where they should be placed vertically, the socket being in the floor or in the top, as most convenient, and not horizontal as in our illustrations.

Our engravings represent a perspective view of the ring bolt, Fig. 1, and an horizontal section. Fig. 2. A represents the slide or bolt, the outer part of which, *a*, is of quadrilateral form, and has a chamfered end, *b*; the other part, *c*, of the bolt is cylindrical, and is fitted loosely in a guide, *d*, the shank of which is screwed into the door, B. The outer or quadrilateral part, *a*, of the bolt is fitted in a guide, *e*, that is secured to the door, B, by screws, *f*, which pass through a flanch, *g*, connected with the guide case. Through the part, *a*, of the bolt, a ring, C, passes, and on the cylindrical part, *c*, of the bolt a spiral spring, D, is placed, this spring being between the guide, *d*, and part, *a*, of the bolt, and having a tendency to keep the latter forced out from the guide case, *e*.

E is a socket or nosing in the form of a quarter of a sphere having a flanch, *h*, at its base, through which screws, *i*, pass to secure it to the casing, E. The socket is secured to the casing in line with the bolt, A, and a recess is formed in it to receive the outer end of the bolt, A, as seen clearly in Fig. 2, the spring D having a tendency to keep the outer end of the bolt in the socket or nozing. In the socket, openings, *j j*, are made, to allow the shackle of a padlock to pass through and secure the bolt by the ring as shown by dotted lines in Fig. 2. It will be seen that when the slide or bolt is secured in this way the implement cannot be detached from the door, because the ring, C, covers the screws, *f* and *i*, rendering them inaccessible.

The device may be used as a simple catch or fastening only, by not using the padlock, the ring being allowed to rest or bear against the bolt, and if at any time it is necessary to render the bolt inoperative, the ring, C, may be turned so as to fit over the guide, *d*, the ring holding the bolt back from the nosing. A chain, *a'*, may be attached to the end of the part, *c*, of the bolt, and passed through the door, so that the door may be opened from the outside.

The inventor of this cheap and ingenious device is George W. Devin, of Ottumwa, Iowa, from whom any more information may be obtained. It was patented May 4, 1858.

How to Consume Smoke.

Peter Spence, of Manchester, England, proposes not only to do away with the smoke of large cities, but with the chimnies also. His plan is, to carry the smoke into a large central sewer under the street by proper conduits, and then have at some distance from the city, a Tower of Babel-like chimney, into which all the smoke pipes should come. The idea is certainly novel, but scarcely practicable just yet.

INDEPENDENCE DAY. — This being the Fourth of July week, some of our subscribers may not receive their papers as early as usual by one day.

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Scientific American.

NEW YORK, JULY 10, 1858.

Report of the Commissioner of Patents on Goodyear's Extension Case.

We give, on another page of our paper, the able decision of Commissioner Holt in the extension case of Goodyear's india rubber patent. Whatever difference of opinion may exist in the minds of inventors and the public at large as to the justness of the conclusions arrived at, we think that a perusal of this document will convince all, that, Mr. Holt is not only possessed of fine abilities, but also that peculiar appreciation of the interests and worth of inventors which pre-eminently fits him for the responsible office of Commissioner of Patents. Throughout the entire document there is discernable a conscientious desire to arrive at a decision compatible with the facts, and the interests and rights of all concerned, and if an error has been committed at all, it is one of judgment and not of will. In the concluding portion, which we shall give in our next issue, the Commissioner incidentally makes a dignified and manly defense of the rights of inventors; and in dwelling upon the injuries alleged to have been sustained by Goodyear, in common with other inventors, at the early stages of the introduction of his invention, he reaches a degree of eloquence which is alike honorable to his head and heart.

Our original intention was to publish this report in three or four parts, but after carefully examining it, we found that by dividing it into more than two parts its sense would be materially affected in the perusal. We think our readers will agree with us that the general interest attached to this paper fully justifies us in giving it the large space we do.

Accidents—Their Cause and Prevention.

We are no fatalists, and therefore believe that the great majority of the numerous accidents for which our country has such an unenviable reputation, are caused either by recklessness or carelessness. With the greatest amount of care and forethought which erring mortals can exercise, some accidents will, no doubt, occur; but, at the same time, we are confident that nine-tenths of those which have taken place might have been prevented by the adoption of such measures and the employment of such means as the common sense of almost any man might have suggested. For example, on the afternoon of the 21st ult., during a violent gust of wind, a large glass factory at Hunter's Point, near this city, was blown down, and two persons were killed and several wounded by the falling walls. Could this accident have been prevented? It could, easily, by simply making the factory walls thicker when they were erected. The verdict of the Coroner's jury in this case was:—"We unanimously agree that Bernard Slane and Thomas Gill came to their deaths by the falling of the west wing of the building known as the 'American Flint Glass Company Works,' during a violent blow of wind; and that the above-named building was not constructed with sufficient strength for the purpose for which it was used."

The walls of the structure were very thin—far too flimsy, according to the common sense of every man who examined them—and the mortar employed possessed little more adhesiveness than sand and water. It was erected last year by contract, at a very low price, to *save* money. The material damages by the accident amount to $10,000, and had four thousand dollars extra been expended at first to erect a more solid structure, six thousand dollars would have been saved, and Mr. B. Slade, the father of the principal proprietor, who was killed, would now probably be in the land of the living. How recklessly "cent wise and dollar foolish" some persons are!

On the 16th ult. a large brick store in Milwaukie, Wis., suddenly fell, and killed five persons. The crash was not caused by wind or storm, but by the very defective walls, which could not support the weight of goods on their floors, and their weight was not very great. This structure was also built with thin flimsy walls, to save money.

The steamboat *Pennsylvania*, (noticed by us last week,) which exploded her boilers, and killed over two hundred persons, was engineered by careless men, as it is credibly reported that the disaster was occasioned by the want of water in the boilers. We might go on and instance hundreds of such cases, but those related are of recent date, and should be sufficient of themselves to awaken such a humane and intelligent spirit in the community as would lead to an entire reform in the means taken by all our people for the prevention of such shameful and mournful events.

The Patent Office Structure.

We are pleased to observe that the independent press, understanding the unmistakable intention of the late article on the above subject in the Washington *Union*, follows our example, and administers to the author a fitting rebuke for the gratuitous insult conveyed to the meritorious inventors of our country, and the effort to eventually wrest from them the noble building to whose erection they have contributed so largely. A writer in the Washington *States*, in the course of a communication in answer to the gentleman who wrote the article, says:—

"The building has the right name now, and it should not be changed; especially as inventive genius, patentees, and inventors have contributed largely towards its erection. The Patent Office is nearly a self-sustaining institution, and would be quite so if Congress would only modify the law, as at present required. Its name, at least, should stand the same as long as the arts, sciences and agriculture flourish, or American liberty stands, as there is no department of the government of half the importance to the people at large as is the Patent Office and the Patent Office Reports. To this every Member of Congress can attest, by the great demand for the Reports by their constituents.

As to the Interior Department, of which the writer referred to speaks so highly, there is no one who disagrees with him. It is a department of great utility to the country, and no one should wish to rob it of an iota of its great power and good influence, especially under the able, judicious, and honest management of its present chief. But a building for this great department, it is believed, should be erected separate from the Patent Office—one that would amply accommodate its numerous bureaus, and one equal in every respect to the magnitude of its business."

The Washington *Star* is no less earnest in its denunciation of this attempt to divert the building from its original and legitimate design, and in answer to the *Union*, makes the following appropriate remarks:—

"The *Union* seems to regard the name of 'Patent Office' as too insignificant to be applied to so noble a structure. On the contrary, we think the name suggestive of the grand, lofty, and ennobling; and that no building can rise, even in imagination, as too splendid to enshrine the model machinery of inventors—true benefactors of mankind. The press on which it prints its ideas of the insignificant 'Patent Office,' should teach it to be grateful to the genius that gives it the facilities it possesses—the rollers that ink its type, the type itself, its news by telegraph, the gas that turns night into day in its office, in fact, almost everything it enjoys should admonish it to look with admiration and even awe on the god-like productions of genius.

Inventors, as a portion of the productive utilitarian classes, are the true nobility of our land. By them, and for them, governments are instituted. The name 'Patent Office' indeed adds dignity to the building, because it suggests and embodies the power and might of American genius, progress and sovereignty. It is in a Patent Office that the American people can best be seen and appreciated, for there is embodied much indeed of their mind—of that which distinguishes them from all other nations."

Swill Milk.—Wise Officials.

The majority of our readers are, no doubt, aware that in this good city of New York, it has lately been discovered that for some time past our lacteal beverage has been of the variety called "swill;" and as this is not conducive to the bodily welfare of the inhabitants, the Board of Health set to work upon the milk question, intending, no doubt, to "reform it altogether." To do this more effectually, witnesses were examined, investigations and official visits (of which due notice was given) were made; and the sheds which had been reported dirty were found clean; and such was the tenderness of the cowkeepers that the diseased cattle were sent into the country for their health immediately before the visit was made. The result of all this was a report, or rather two reports; one, that of the majority, containing analyses of swill milk by Drs. Doremus and Chilton, was in every way favorable to the swill milk; the other, the minority, not having $500 to pay for analyses, were obliged to content themselves with old analyses by Dr. Reed, and their report was opposed to swill mllk.

We have hitherto been silent on this subject, surrounded as it was by so many personalities, and so much excitement, but when our city officers—those appointed to guard the health of the city—sanction, with a few suggestions, the practices of the cowkeepers, we must protest. Because the analyses show the milk is good, that only proves that, chemically, it is pure; but air, carrying with it the yellow fever, or while sweeping over a land laden with pestilence, is chemically and microscopically pure. You cannot weigh, measure, and detect the germ of disease, as you do the lime in chalk; and any reasonable person can at once see that the milk of any animal fed upon an unnatural diet must be unhealthy and dangerous. It seems to us that the Board of Health is composed of men whose sublime philanthropy outweighs even the duties of their office; and that whenever they are about to investigate a nuisance or inconvenience, they send a courier beforehand to announce their advent, in order that the nuisance may be removed, and they will be spared the pain of catching a fellow-citizen at a disadvantage. This has evidently been the case with their swill milk investigation, for they have not observed things which are to be seen every day, and as a result they have lent their official name to the support of a system of stock and cow feeding which cannot be other than prejudicial to the welfare of the community. When will officials be appointed for their capabilities, and when will old ladies be refused admission to a Board of Health?

Foreign Estimation of Inventors.

In European countries, inventors of meritorious articles are not only regarded as general benefactors, but receive that deference and distinction which superiority of mind should command, no matter what may be the channel of its development. In those countries it is not thought beneath the dignity of the most elevated in station to devote their minds to the advancement of science and mechanical inventions in all their details, and hence a pre-eminence is given to all engaged in these praiseworthy undertakings. In the lists of patents issued abroad may be found the names of persons of high rank in connection with inventions calculated to produce good, yet of such an apparently trivial and common-place character as would shock the nicer sensibilities and false pride of many of our aristocratic philanthropists and money-making men of science, did they see their names in connection with them. To all such persons we commend the example of the many persons of eminence in Europe, who, having produced an invention advantageous in its character, think it an honor to reap fame or emolument from its introduction to the public under the fostering care of their names and patronage.

Horseshoeing.

[Continued.]

The safest guide to the proper amount of seating is to apply the shoe to the foot, and observe whether there is room for a picker to pass freely between the shoe and the sole; if there should not be sufficient space for a free passage all around the shoe, the seating must be increased; and if there should be more than is necessary, it must be diminished. The smith, having carefully prepared the foot, and selected a shoe with a proper amount of seating for it, has next to cut off the heels, and fit the shoe to the foot; and he must always bear in mind that fitting the *shoe* to the *foot* does not mean fitting the *foot* to the *shoe*—an error that smiths are prone to fall into.

Having cut off the heels and opened the nail-holes, the next thing to be done is to turn up a clip at the toe, preparatory to fitting the shoe to the foot, which latter operation should always be commenced at the front of the foot, and be gradually and carefully carried back to the quarters and heels. Every shoe should have a clip at the toe, to prevent the shoe being driven back on the foot, and bending the nails in the crust. But I strongly object to the clip which I often see turned up on the outside of a shoe, which is not only useless, but destroys more horn than two or three nails would do.

Fitting the heels will call for a little extra care at first, as it involves the abandonment of some deep-rooted prejudices and groundless fears. First, the prejudice in favor of square heels projecting beyond the hoof, both behind and at the sides, must be yielded; and the fear lest the smallest portion of the shoe should happen to touch the frog must be given up, before anything like accurate fitting can be obtained. The edge of the shoe must be made to correspond with the edge of the hoof all around, from heel to heel, and to do this effectually, and keep the web of the shoe as wide at the heels as it is at the toe, the heels must be brought in until they very nearly touch the frog. I would not have them bear on the frog, but I would rather see them touch it than be able to lay my finger between the frog and the shoe.

There are many advantages attending the bringing in of the heels, and not one single disadvantage to set against them. In the first place, it removes all the points and projections by which stiff ground is enabled to pull off the shoe; in the next place, it affords a good, firm, flat surface for the heels of the hoof to rest upon, and, by bringing the sides of the shoe nearer together, the navicular joint, which lies in the hoof above the frog, and about an inch from its point, is saved from many an unlucky jar from a stone in the road, by the shoe receiving it instead of the frog.

The inner quarter is not only straighter and more upright than the outer quarter, but the crust is thinner and more elastic, and consequently expands in a greater degree to the horse's weight. But when we talk of the hoof being elastic and the foot expanding, we would by no means have it inferred that they bear any relation to the elasticity or expansion of india rubber; if they did, the bones of the foot would be thrust through the hoof during violent action, or in a down leap. The elasticity and expansion are small in degree, scarcely exceeding the eighth of an inch in the feet of most horses, that have been several times shod, but they are most important in their consequences, by affording exactly the amount of enlargement of the cavity necessary for the descent of the bones of the foot, without squeezing the sensitive parts which line the hoof.

A large number of flat-footed horses cannot go safely at any time without some protection over the sole, and all horses would be benefited by it when the roads are strewed with loose stones; but it is a mistake to suppose that leather, or any substitute for it, inserted between the shoe and foot, calls for a greater amount of fastening than five nails; they will retain a shoe, with leather under it, as firmly as if the leather were not there. All

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that is required is, to make the leather fit the shoe as accurately as I desire the shoe to fit the foot, and that no projecting portions be left either behind or at the sides of the heels; and instead of the leather being cut square at the heels, I would have it slightly arched inwards from heel to heel. It is necessary, however, to prepare the foot before the leather is put on, and the best way of doing it is to smear the whole lower surface of the foot and frog with common tar; gas-tar must be especially avoided, as it dries and hardens the horn, instead of keeping it moist and promoting its growth, as common tar does; then the hollow on each side, between the frog and the crust, from the point of the frog back to the heels, should be filled with oakum dipped in tar, and pressed down until the mass rises somewhat above the level of the frog on each side, and gives it the appearance of being sunk in a hollow. A small portion of oakum may be spread over the sole in front of the frog, but none must be put on the frog itself, excepting the bit in the cleft, which is necessary to prevent dirt working in from behind. The best way of dealing with this bit is to pull some oakum out straight, twist it once or twice, fold it in the center, then dip it in tar and press it into the cleft, and carry the straggling ends across the frog, to mix with the mass on the side of it. Oakum is a much better material for stopping the feet than tow.

The hind foot is differently formed from the fore foot, and requires to be differently shod; nevertheless, the same principle of fitting the shoe to the foot, whatever its shape may be, bringing in the heels close to the frog, and placing the nail holes so as to permit the inner quarter and heel to expand, applies with equal force to the hind as it does to the fore shoes.

GOODYEAR'S PATENT EXTENSION.

COMMISSIONER HOLT'S DECISION.

UNITED STATES PATENT OFFICE,
June 14, 1858.

In the matter of the application of Charles Goodyear, for the extension of a patent granted to him for "improvement in india rubber fabics" on the 15th day of June, 1844, and which was re-issued in two separate patents on the 25th day of December, 1849, under the designations of "improvement in processes for the manufacture of india rubber," and "improvement in felting india rubber with cotton fiber"—

It appears that on the 30th of January, 1844, the applicant, through his agent, (Newton) obtained from the English government a patent for this invention or discovery, known in popular parlance as a "process for vulcanizing india rubber," and on the 15th of June thereafter the patent now sought to be extended was issued from this office. It is assumed and insisted by the contestants that the American patent should have borne even date with the English, and that, in law, it expired with it on the 30th of January last, and, in consequence, it is denied that the Commissioner has any authority to entertain a petition for its renewal. What shall be the date and duration of a patent is a question which must be decided by this Office on each original application, and in the case under consideration it was determined that it should bear date the 15th of June, 1844, and should secure a monopoly of the invention for fourteen years thereafter. If this was irregular in view of the English patent, it did not render that issued by this Office void, as was held by the Supreme Court in 15 Howard 112, O'Reilly *et al. vs.* Morse *et al.* Being at most voidable, it would seem that it should be treated as valid until vacated by the judgment of some judicial tribunal. At all events, whatever may be the power of the courts over the instrument, it is not believed to be competent for the Commissioner in a summary, and in some respects a collateral proceeding like this, to revise and reverse a former decision of this Office, under which so many rights have been vested. Were his power, however, plenary in the matter, I should not hesitate to hold that the provisions of law cited do not sustain this objection, which has been taken in the nature of a plea to the jurisdiction.

The Commissioner, assuming that the 8th section of the act of 1836, and the 6th section of that of 1839, being in *pari materia*, must be construed together, goes on to argue, from the fact that the specification and drawings for the American patent being filed on the 15th day of January, 1844, fifteen days before the issue of the English patent, that this case is relieved from the operation of the provision of the statute of 1836, which declares that nothing therein contained "shall be construed to deprive an original and true inventor of the right to a patent for his invention, by reason of his having previously taken out Letters Patent therefor in a foreign country, and the same having been published at any time *within six months next preceding the filing of his specification and drawings. And, whenever the applicant shall request it*, the patent shall take date from the filing of the specification and drawings; not, however, exceeding six months prior to the actual issuing of the patent."

"But should it be treated as subject to it," says the Commissioner, "as the American patent was issued four and a-half months after the publication of the English, the most that could be claimed would be that the applicant might '*on request*,' have had his patent antedated, so as to have reached back to the filing of his specification and drawings, *but he was not bound to do so.* It is manifestly a privilege bestowed, and not a duty, imposed upon him. He did not choose to avail himself of that privilege, and hence the patent went out, properly bearing its actual date.

The novelty and original patentability of this invention, as well as its great public utility, are fully established by the report of the Examiner, and by the depositions on file. But two leading questions, therefore, remain to be disposed of:—

First, Has the applicant used due diligence in developing his invention, and in introducing it into public use?

Second, Has he, from the use and sale of the invention, received a reasonable remuneration for the time, ingenuity, and expense bestowed upon the same, and the introduction thereof into use?

Upon the first point, the testimony alike of the applicant and of the contestants is concurrent and conclusive. From the first moment that the conception entered his mind until his complete success—embracing a period of from sixteen to eighteen years—he applied himself unceasingly and enthusiastically to its perfection, and to its introduction into use, in every form that his fruitful genius could devise. So intensely were his faculties concentrated upon it that he seems to have been incapable of thought or of action upon any other subject. He had no other occupation, was inspired by no other hope, cherished no other ambition. He carried continually about his person a piece of india rubber, and into the ears of all who would listen he poured incessantly the story of his experiments, and the glowing language of his prophecies. He was, according to the witnesses, completely absorbed by it, both by day and night, pursuing it with untiring energy, and with almost superhuman perseverance. Not only were the powers of his mind and body thus ardently devoted to the invention and its introduction into use, but every dollar he possessed or could command through the resources of his credit, or the influences of friendship, was uncalculatingly cast into that seething caldron of experiment which was allowed to know no repose. The very bed on which his wife slept, and the linen that covered his table, were seized and sold to pay his board; and we see him, with his stricken household, following in the funeral of his child on foot, because he had no means with which to hire a carriage. His family had to endure privations almost surpassing belief, being frequently without an article of food in their house, or fuel in the coldest weather; and indeed it is said that they could not have lived through the winter of 1839 but for the kind offices of a few charitable friends. They are represented as gathering sticks in the woods, and on the edges of the highways, with which to cook their meals, and digging the potatoes of their little garden before they were half grown, while one of his hungry children, in a spirit worthy of his father, is heard expressing his thanks that this much had been spared to them. We often find him arrested, and incarcerated in the debtor's prison; but even amid its gloom his vision of the future never grew dim—his faith in his ultimate triumph never faltered. Undismayed by discomfitures and sorrows which might well have broken the stoutest spirit, his language everywhere, and under all circumstances, was that of encouragement, and of a profound conviction of final success. Not only in the United States did he thus exert himself to establish and apply to every possible use his invention, but in England, France, and other countries of Europe, he zealously pursued the same career. In 1855, he appeared at the World's Fair in Paris, and the golden medal and the Grand Cross of the Legion of Honor were awarded to him as the representative of his country's inventive genius. Fortune, however, while thus caressing him with one hand, was at the same moment smiting him with the other; for we learn from the testimony that these brilliant memorials passed from the Emperor and reached their honored recipient, then the occupant of a debtor's prison among strangers and in a foreign land—thus adding yet another to that long sad catalogue of public benefactors who have stood neglected and impoverished in the midst of the waving harvest of blessings they had bestowed upon their race. Throughout all these scenes of trial, so vividly depicted by the evidence, he derived no support from the sympathies of the public. While the community at large seem to have looked on him as one chasing a phantom, there were times when even his best friends turned away from him as an idle visionary, and he was fated to encounter on every side sneers and ridicule, to which each baffled experiment and the pecuniary loss it inflicted added a yet keener edge. The mercenary naturally enough pronounced his expenditures (so freely made) culpably wasteful; the selfish and the narrow-minded greeted the expression of his enlarged and far-reaching views as the ravings of an enthusiast; while it is fair to infer, from the depositions, that not a few of the timid and plodding, who cling, tremblingly apprehensive of change, to the beaten paths of human thought and action, regarded him as wandering on the very brink of insanity, if not already pursuing its wild and flickering lights. Such in all times has been the fate of the greatest spirits that have appeared on the arena of human discovery, and such will probably continue to be the doom of all whose stalwart strides carry them in advance of the race to which they belong. With such a record of toil, of privation, of courage, and perseverance in the midst of discouragements the most depressing, it is safe to affirm that not only the applicant used that due diligence enjoined by law, but that his diligence has been, in degree and in merit, perhaps without parallel in the annals of invention.

Before entering upon an examination of the second leading question, several preliminary issues raised by the contestants must be met and decided.

The account of expenditures and receipts originally presented, it is admitted, was too general in its terms to be accepted as a compliance with the requirements of the statute. Hence subsequently in April an additional or amended account was offered, which, in consequence of the applicant in England, was not sworn to by him until the 23d of that month, and was not filed in this Office, *as thus verified*, until the 8th May. This amended statement was intended, not as a substitute for the original, but as a correction of certain inaccuracies which had crept into it, and as furnishing the details which law and usage demand. It is objected that it should not be considered, because, when first lodged here, it was without the oath of the applicant, and because, when that oath was appended on the 8th May, it was too late for the contestants to take their rebutting testimony.

On this point the Commissioner brings forward facts to excuse the alleged delinquency of the inventor, and to overrule the objection, and says in the absence of any specific averment, it is impossible to decide, in the language of a rule of this office, that a substantial injury has been wrought to the party raising the objection.

On the other question, whether, in determining the adequacy of the remuneration received by the applicant, the receipts of his assignees and licences—admitted to amount to many millions—should be charged to the patent, the Commissioner says:—"The first impression of my mind was favorable to the position taken by the contestants, but a more critical examination of the statute has led me to an opposite conclusion." He then gives his reasons in full for regarding the profits of assignees and licensees from inventions in certain cases, as the profit of that great public of which they are so important a part, and continues—

The first step in determining the sufficiency of the remuneration is to ascertain, as far as practicable, the amount of the applicant's receipts and expenditures in connection with the invention. The apparently discrepant and informal character of the accounts filed has provoked much severity of criticism and some denunciation on the part of counsel. It is admitted that they have not the precision and symmetry which belong to the products of the counting-room, and which might have been imparted to them by the applicant, had he been a merchant's clerk, instead of the brilliant and impulsive genius that he is. In explanation of the generality and uncertainty for which it is insisted they are marked, it is in proof that the applicant never kept any books or memoranda from which more reliable statements could be prepared. In this respect his course of life has been in entire harmony with that of the class to which he belongs. Inventors and other men of high creative genius have ever been distinguished for a total want of what is called "business habits.' Completely engrossed by same favorite theory, and living in the dazzling dreams of their own imagination, they scorn the counsels and restraints of wordly thrift, and fling from them the petty cares of the mere man of commerce as the lion shakes the stinging insect from his mane. The law, in its wisdom, takes cognizance of human character and deals with men and with classes of men as it finds them. It seems, in this instance, to have assumed and justly, that, if we would have the magnificent creations of genius, we must take them with all thoee infirmities, which seem as inseparable from them as spots are from the sun. Hence the statute does not require that the accounts of inventors shall have that formality and that severe exactitude which might well have been claimed of a merchant, with his ledger open before him. All that is insisted on is that the statement furnished shall be 'sufficiently in detail to exhibit a true and faithful account of lose and profit in any manner accruing to him from and by reason of said invention.' It is manifest that it is to the results—which indicate 'loss and profit'—rather than the minute elements of the transactions which form the subject of the acconnt, that the law looks. The applicant's statement, as amended, appears to have been compiled with the most laborious care, and from every source of information accessible to him or his attorneys. It is regarded as fully conforming to the letter and spirit of the statute. The principal discrepancy between the original and amended statement is satisfactorily explained. The applicant held at the same moment three patents for processes connected with the manufacture of india-rubber, viz., that of Chaffee, that of Hayward, and that for his own vulcanizing process. In all his contracts, he transferred these three patents together, making no designation, in the body of the assignments, of the estimate placed upon either of them separately. In his original statement, he inadvertently charges to his own patent the whole of the receipts from this source; in his amendment, he sets the Chaffee and Hayward patents down as properly chargeable with one-fourth of the proceeds of such sales, and makes, accordingly, a corresponding deduction from his exhibit of receipts. The language of his first statement, properly interpreted in the light of the assignments themselves, justified this step. Whatever those patents may have cost him, they were his property, and it was due to truth and to the claim now under consideration that their actual value should have been ascertained. The witnesses who speak of them prove conclusively that the applicant has rather under than overrated them, which relieves him from all imputation in the matter."

After further examining the items adduced, and analyzing the evidence of both sides on this question of remuneration Mr. Holt concludes his remarks upon this subject with the following positive expression of opinion:—"It is probable—indeed, in view of the whole testimony, it is my firm conviction—that if it were possible to extract from the tangled mazes of the multifarious aud now half-forgotten transactions connected with the invention, all the moneys expended therein, it would be found that, instead of there being a balance to its credit, the balance would be on the other side. I am justified in arriving at this conclusion from the fact, that, although the applicant has had no other occupation or business, yet, instead of having now in hand this sum of $54,733 63, he is admitted to be penniless and overwhelmed with debt—and this, too, notwithstanding his life is shown to have been temperate, frugal, and in all respects self-denying. Being reimbursed his actual 'expenses,' is this sum of $54,733 63 a reasonable remuneration to the applicant for the 'INGENUITY and TIME' bestowed on the invention and the introduction thoreof into use?"

[CONCLUDED NEXT WEEK.]

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Correspondents

J. L., of N. Y.—If you imagine that the machine you describe will operate of itself, you would be convinced of your error upon making a trial. We have no confidence whatever in such a jumbled-up mess of wheels, rollers, gudgeons, inclined planes, weights, &c. We mean to do you a service when we say that your time is completely wasted upon such moonshine projects.

F. D., of N. Y.—The tarnishing of silver goods generally arises from the presence of a small quantity of sulphurous gas in the atmosphere.

D. M. B., of Tenn.—It is decidedly dangerous to use chalybeate water in a boiler. The purer the water is in a boiler, the better. You should read our articles on the subject of boilers in the two last and next numbers.

T. T. E., of Oregon.—You had better purchase Dr. Reid on the "Ventilation of American Dwellings," published by Wiley & Halstead, 351 Broadway, New York.

J. S. H., of Cal.—Carbonic acid has long been known to possess antiseptic properties, but it is not so strong or so convenient of application as pure carbon, or charcoal, which is the best antiseptic known.

J. L. & D. D.—It is not new to form journals hollow, with small openings in the portions of their peripheries which bear on the boxes, for the lubricating oil or water to percolate through.

H. P., of Mo.—Your ideas of the advantages of low roofed rooms are incorrect; a sitting-room cannot be too high.

A. B., of Mo.—The method of making and filling balloons, and a full history of aerial navigation, is given in Wise's "History and Practice of Æronautics," published by J. A. Speel, Philadelphia, in 1850.

B. S., of Md.—We have received your communication on the Atlantic telegraph cable, and in view of the early arrival of intelligence of the result of the last effort to lay it, we have concluded to postpone the consideration of your views until after that period.

J. H. G., of Ky.—Your arrangement of cog wheels is well-known, and is called step gearing. It is in use on some of the ocean steamships for driving screw propellers.

J. B., of Fla.—Mucilaginous substances, like slippery elm or potatoes, have been successfully used for removing scale from steam boilers. The material which we believe is generally considered best for covering steam pipes to prevent condensation, is felt, but either of the materials you propose we should think would serve very well. We have no knowledge which enables us to say which would be the best. It is decidedly advisable to provide a cock for the escape of water of condensation from the pipe. A common force pump would serve the purpose of feeding the boiler.

L., of Cal.—We are not aware of any new deodorizing agent which has lately achieved great success, and we think that common chloride of lime, or, as it is called, "bleaching powder," is the best. Make a saturated solution and bottle it, and you will find that it will sell well. You had better communicate with Mr. Benson, of Front street, Brooklyn, concerning a vacuum pan, telling him the work you want to do.

I. H. C., of Ohio.—We do not discover anything new in your filter. Small filters to be attached to hydrants have been so constructed that in filtering the water passed upward through the diaphragm, and provision was made by a two-way cock, to cause the water to pass upwards to be filtered, or downwards to wash away the dirt. Wright's patented filter is on this principle.

C. C., of Mich.—You have done wisely by submitting your invention for examination before exposing its peculiarities to the inspection of the curious.

Z. H. & C., of Ohio.—The "curiosities" you send for our examination are simply quartz stones. They are about equal in value to some pearls, which, it is said, were obtained in a small brook in Massachusetts after a week's labors. The best of them were valued at a cent apicce.

G. C., of Mass.—Henry Wadsworth did not obtain a patent in 1856 for an adhesive plaster. It is not the subject of a patent; therefore, you can go on and make a plaster for wounds of isinglass or any other substance.

J. J. H., of Ala., and G. C., of Ga.—Procure one of Wheeler & Wilson's sewing machines. You cannot do better.

A. T. B., of Ohio.—Pitts' patent on separators expired on the 29th of last month. The patentee memorialized Congress for another extension, but the Committee on Patents made an adverse report. The invention is now public property.

Money received at the Scientific American Office on account of Patent Office business, for the week ending Saturday, July 3, 1858:—

H. C. S., of Ohio, $30; S. B. R., of ——, $33; M. M., of L. I., $30; C. L. S., of Ky., $25; J. J., of N. Y., $30; E. R., of Wis., $25; I. D., of Conn., $30; J. M., of N. Y., $30; R. P. B., of Pa., $30; J. R. F., of Ohio, $30; J. M. E., of N. Y., $30; C. & S., of L. I., $30; J. C. C., of N. Y., $30; M. B. H., of ——, $30; J. M., of Iowa, $50; J. H., of Ind., $35; H. C. F., of Pa., $55; G. H., of Conn., $25; J. D. S., of Ohio, $25; S. H., of N. H., $30; I. P. H., of Ill., $30; G. W. S., of Conn., $35; C. P. S., of Cal., $25; A. E. McC., of Minn., $20; E. G. G., of N. Y., $30; L. & G., of Conn., $250; R. B., of N. Y., $25; H. & H., of N. Y., $30; A. W., of N. Y., $30; S. B. S., of Mo., $25; E. G. A., of Conn., $30; F. D. L., of S. C., $250.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, July 3, 1858:—

S. N. L., of N. Y.; C. L. S., of Ky.; A. S., of N. Y.; S. B. S., of Mo.; G. H., of Wis.; R. B., of N. Y.; J. M. E., of N. Y.; G. W. S., of Conn.; C. P. S., of Cal.; E. R., of Wis.; J. D. S., of Ohio.

Literary Notices.

LORD MONTAGU'S PAGE. By G. P. R. James. Childs & Peterson, Philadelphia.—This is a new historical romance from the pen of this most prolific of modern authors, and will no doubt be hailed with pleasure by thousands of readers who devour each new work as it comes from Mr. James' pen. The present romance seems rather whimsical in its character; but the incidents must be exciting, the personages graphically drawn, and the unities of the story well preserved, as all will bear the impress of the master's hand.

BLACKWOOD'S MAGAZINE.—The above magazine for this month is a most entertaining number. Messrs. Scott & Co., No. 54 Gold street, this city, are the publishers of the four British Quarterlies, namely: the Edinburgh, Westminster, London and North British Reviews, as well as the above magazine, and to their credit it should be related, they voluntariiy pay over $3,000 per annum to the foreign publishers. New volumes of these able periodicals commence this month (July), thus affording a good opportunity for new subscribers to begin and old subscribers to renew their subscrfptions. Those who desire to be well versed in foreign literature should read these publications.

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Yours, very truly, CHAS. MASON.

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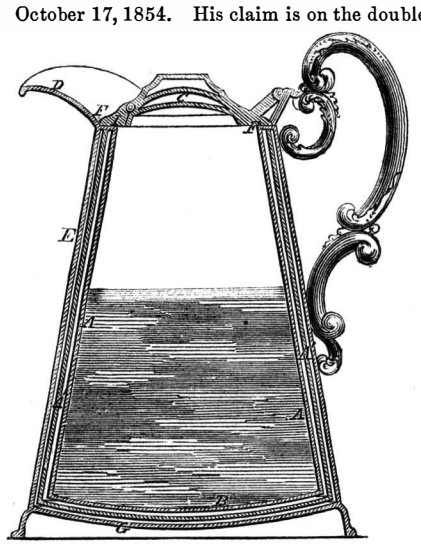
Science and Art.

Ice Pitchers.

The Egyptians, thousands of years ago, appreciated as much as we do now, cool water in summer, and they had many devices for cooling it by evaporation. The common jug of red clay, used to this day all over the East as a water bottle, is porous and unglazed, and by the evaporation of the thin film of water which is constantly permeating through the pores to the surface, the contained liquid is kept comparatively cool. The principle on which the well-known and generally-used ice

pitcher acts is very different. When we place a piece of ice in water, the heat, latent and sensible, is called forth to melt the ice, and in so doing the water is constantly kept at the same temperature as the ice, just so long as any ice remains. Now if we surround the pitcher in which the ice and water is placed with a non-conductor, so as to prevent radiation of cold, or more properly, the entrance of heat, the ice will be retained much longer, and the water will remain cooler, for a greater length of time. To do this, the double-walled vessel called an ice pitcher, and a section of which forms our first illustration, was devised by James Stimpson, and patented October 17, 1854. His claim is on the double



wall pitcher, with double sides, bottom, and lid, the lid having a chain or string attached to the handle. Well as this has answered for a long period, it was yet capable of some improvement, in order that the ice might be made to last still longer, and the water kept cool for a greater length of time. This desirable improvement has now been made by George W. Smith, of Hartford, Conn., who has added another wall to the pitcher, and made it a treble instead of a double-walled one, thus doubling its cooling powers without much extra labor or expense.

Our second illustration is a section of one of these, E G being the outside case, inside this is another, A′, and with the inside case, A B, form the three walls. These cases are perfectly independent of each other, and are only connected or joined together at the top, F, on which the lid, C, rests, which is also treble-walled. To the lid there is a hinged lip, I, that opens by its gravity as the pitcher is inclined, and allows the water to flow through the spout, D, thus rendering it unnecessary to open the lid except when the pitcher is to be replenished with ice or water.

That this is an improvement every one will see, and we have no doubt that they will be generally introduced. Specimens of these pitchers can be seen at the office of the manufacturers, Messrs. Rogers, Smith & Co., 170 Broadway, New York, or Hartford, Conn.

Removing Moles and Warts.

Messrs. Editors.—A very effective cure for moles and warts without pain is to tie a waxed thread around each, as near the root as possible, not tight enough to break the skin, or cause pain. As fast as the excrescence is observed to wither away, a new thread must be tied below the previous one; this may be done every day. In a few days the wart or mole will be gone. I have done this oftentimes without suffering pain.

F. D.

Fire Island, N. Y., June, 1858.

LOANE'S SELF-ACTING CAR COUPLING.

Fig. 1

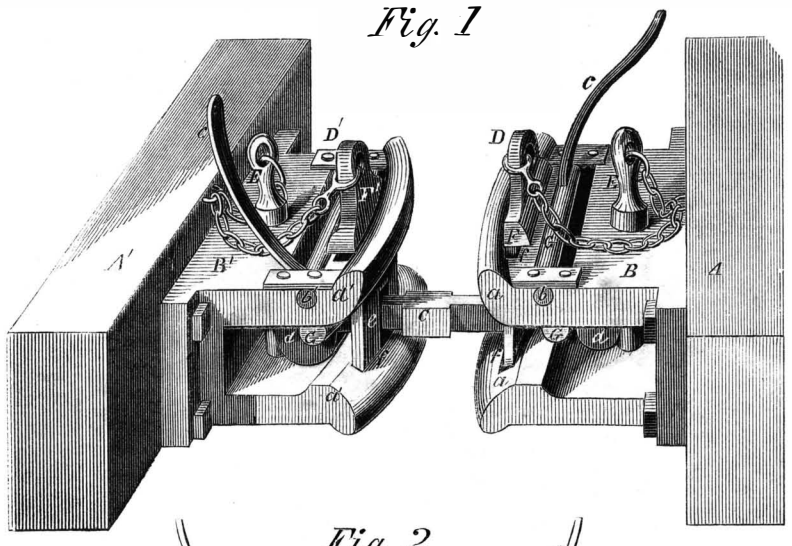
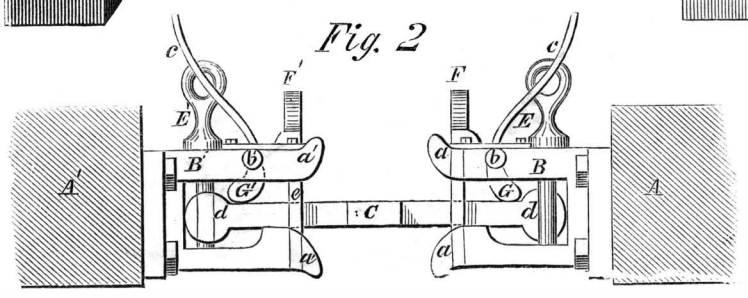


Fig. 2



This coupling is styled self-acting, because the bolt, being placed in its proper position in one car, the instant it comes in contact with the other it couples them firmly together. It will also couple readily on a curve, and should any car of a train run off or overturn, the coupling immediately detaches it from the rest, so that it does not drag the other cars along with it, as is often the case with the present mode of coupling, thus insuring greater safety to passengers, and saving a vast amount of property.

In our engravings, Fig. 1 is a perspective view of the coupling, and Fig. 2 a side elevation. In both, A and A′ represent the platform of a car, to each of which is attached the coupling head, B B′, each having a horizontal mouth open at the side, in them. The lower part of each coupling head is provided with a lip or thickness at its outer edge, as seen at *a a′*, and the upper part is turned up to allow of the easier entrance of the coupling bar, C. This coupling bar may have a square head at *d*, when it will be held in position by the pins, E E′, and the locking jaw, G G′, which swing upon axes, *b b′*, and project through slots in the coupling heads, B B′. Each of these locking jaws is provided with a lever, *c*, that can be pressed by the foot, and the cars unhooked when in motion without the operator being at all endangered by contact with the mechanism. A great advantage of this mode of coupling is, that a car provided with the square-headed bolt, G, will couple with an ordinary car coupling as well as with one like itself.

The other method of coupling which is also illustrated in the accompanying illustrations is to have the head of the coupling bolt made round in its vertical section, as seen at *d d*, and having in the coupling head, slots, *f f*, through which there passes a flat holding plate, F F′, in which there is a slot, *e*. This slot passes over the bolt, C, and prevents it from becoming unloosed in one direction, while the locking jaw, G, holds it in the other.

This coupling is remarkably simple, and the head, *d*, has to become worn down to the same thickness as the bar itself before there is any danger of its becoming uncoupled at an improper time; and in cases of collision, this coupling being open-mouthed is likely to catch into each other, and thus prevent the cars from jumping on to each other.

A patent was obtained March 23, 1858, by the inventor, Henry E. Loane, No. 148 Pine street, Baltimore, Md., who may be addressed for further particulars.

Trial of Steam Fire Engines.

The three steam fire engines lately built for the Philadelphia Fire Department—the "Philadelphia," "Young America," and "Hope"—made a trial of their powers a few days since, in the presence of a large concourse of spectators. The result was creditable to all the machines, but the "Philadelphia" was the winner. The "Philadelphia" threw a stream through a 1½ inch nozzle, a distance of 231 feet, the "Young America," 209 feet, and the "Hope" 212 feet. The "Philadelphia" and "Hope" were built by Reany, Neafie & Co., in Philadelphia, and the "Young America" by Abel Shawk, in Cincinnati.

Hussey's Cutting Apparatus.

On page 333 of the present volume of the Scientific American, we published an engraving of Hussey's cutting apparatus, and his claim dated Aug. 7, 1847, but we then overlooked the fact that his patent had been re-issued April 14, 1857, and we now subjoin the claim of the re-issue:—

"I claim the combination of a vibrating scolloped cutter, the indentations of whose edge act as a series of moving shear blades, with slotted guard fingers, the sides of which act as a corresponding series of fixed shear blades, the parts of such fingers forming the slot, being connected at the front ends only, leaving the rear of the slot open and free for the escape of material that would otherwise clog the cutter, substantially as described."

The Great Rains of 1858.

The amount of rain that has fallen over a large portion of the United States in six weeks, running from the 1st of May to the 12th of June, has scarcely a parallel. The Pittsburg *Journal* has given this subject considerable attention, and says that the average of observations will give about ten inches in May, and five inches to the 12th of June, or fifteen inches in forty-three days. These rains do not appear to have been local, but extend east and west at least one thousand miles, and north and south one-half that distance. No wonder the newspapers are full of accounts of rains, floods, and disasters. Fully one-third of the average of the rains of the year have been crowded into six weeks. The Mississippi and its tributaries might well appear to threaten a young Noachian deluge. No such rains have been experienced since the wet season in May, 1855, and then they were not condensed into so small space of time. It is said that some rain gages showed four and one-half inches of rain on the 11th and 12th of June alone. What the cause of these tremendous rains have been, we are not able to say. There is hardly a doubt but that we will either have an equivalent amount of dry weather, or else some other district of the globe is parched up for want of water. The remarkable fact that the annual fall of rain is so nearly equally balanced, sets at defiance all our notions of wet and dry seasons, though portions of a year are extremely wet or dry.

Rensselaer Polytechnic Institute.

We have received the Annual Register of this valuable institution at Troy, N. Y., and are pleased to find that ninety-nine students have taken hold of the advantages it affords in the past year.

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